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ABSTRACT

Projects are in-depth studies of a topic undertaken by a class, a group, or an individual child. Projects are intended to strengthen children's dispositions to be interested, absorbed, and involved in in-depth observation, investigation, and representation of worthwhile phenomena in their own environments. This Catalog on the Project Approach, the second of its kind, describes and illustrates 13 projects done by children in early childhood and elementary classrooms on topics such as: trees, paper, playgrounds, building, potatoes, balls, cars, the vet, the hospital, shoes, water, and baby blankets. In addition to the project descriptions, several articles address a variety of issues of common concern to teachers implementing the Project Approach. These include the phases of project work, project topic selection, the value of drawing in projects, introducing investigation skills with a mini-project, involving special needs students in projects, engaged learning and standards of work, and helping students at various levels of professional training to learn how to implement the Project Approach. Sections on research and implementation of the Project Approach in Canada, and on the Internet and the Project Approach (including listserv discussions), are also included. The Catalog's final section, "Resources for Implementing the Project Approach," includes four ERIC Digests, a glossary, a list of recommended books, an ERIC bibliography on the Project Approach,

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information on a Project Approach summer institute, and a list of contributors to the Catalog. (EV)

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The Project Approach Catalog 2

by the
Project Approach Study Group

Edited by Judy Harris Helm

Prepared for The Project Approach: An Encore Evening of Sharing Knowledge
National Association for the Education of Young Children Annual Meeting
November 20, 1998

ERIC Clearinghouse on Elementary and Early Childhood Education
University of Illinois at Urbana-Champaign

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Table of Contents

Foreword: Project Approach Study Group Catalog i
Lilian G. Katz

Section 1: Thoughts on Projects
The Project Approach in Action 1-1
Sylvia C. Chard
Issues in Selecting Topics for Projects 1-3
Lilian G. Katz, Sylvia C. Chard
Drawing in the Context of a Project 1-10
Sylvia C. Chard
Teaching Project Skills with a Mini-Project 1-15
Dot Schuler
Projects in Inclusive Early Childhood Classrooms 1-19
Rebecca K. Edmiaston
Projects, Engaged Learning, and Standards 1-23
Judy Harris Helm
Bringing Project Work to a Community College 1-27
Sallee Beneke
Helping Teachers and Preservice Teachers Learn the Project Approach 1-30
Eileen T. Borgia, Diane E. McClellan

Section 2: Special Section on The Project Approach in Alberta, Canada: Reflecting on Eight Years of Doing Projects
The Project Approach in Edmonton, Alberta 2-1
Sylvia C. Chard
Research on the Project Approach in Canada 2-3
The Tree Project 2-6
Teachers: Sharman Armfield, Nancy Thomas, Lee Makovichuk, Diane Mellott
The Paper Project 2-8
Teachers: Fern Reirson, Julie Gellner, Tera Woollard, Shanthu Manoharan, Stephanie Kelly
The Playground Project 2-10
Teachers: Lorraine Leskiw, Shanthu Manoharan, Julie Gellner, Fern Reirson, Stephanie Kelly, Tera Woollard
The Building Project 2-12
Teachers: Darlene Williams, Carmelle Workun

Section 3: Project Summaries from Around the World
Experiencing Documentation 3-1
Judy Harris Helm
The "All about Potatoes" Project 3-4
Teachers: Jane Farish, Mark Mabry
The Ball Project 3-6
Teacher: Debbie Noyes

The Car Project 3-8
Teachers: Sallee Beneke, Rebecca Tonelli, Practicum Students
The Vet Project 3-10
Teachers: Pam Scranton, Brenda Wiles
The "Building a Tree House" Project 3-12
Teachers: Barb Gallick, Lisa Lee, Scott Brouette
The Hospital Project 3-14
Teacher: Candy Ganzel
The Shoe Project 3-16
Teachers: Mary Jane Elliott, Carol Young
The Water Project 3-18
Teacher: Dot Schuler
The "Blankets for Babies" Project 3-20
Teachers: Pat Bainter, Julie Fogarty

Section 4: The Project Approach and the Internet
Internet Resources for Project Work 4-1
Dianne Rothenberg
PROJECTS-L 4-5
The Projects Web Site 4-6
Sylvia C. Chard
Best of the Listserv
On Getting Started 4-7
On Lesson Plans and Accountability 4-11
On Webbing 4-13
On Field Sites and Field Work 4-16

Section 5: Resources for Implementing the Project Approach
ERIC Digests
The Project Approach, by Lilian G. Katz 5-1
Child-Initiated Learning Activities for Young Children Living in Poverty, by Lawrence J. Schweinhart 5-3
Problem Solving in Early Childhood Classrooms, by Joan Britz 5-5
The Contribution of Documentation to the Quality of Early Childhood Education, by Lilian G. Katz and Sylvia C. Chard 5-7
The Language of Projects: A Glossary of Terms Used in the Project Approach 5-9
Engaging Children's Minds: The Project Approach Summer Institute 5-10
Recommended Books 5-11
The Project Approach: An ERIC Bibliography of Books, Documents, and Journal Articles 5-12
How to Obtain Copies of ERIC Documents and Journal Articles 5-35
The ERIC System 5-36
The ERIC Clearinghouse on Elementary and Early Childhood Education 5-37
List of Contributors to The Project Approach: An Encore Evening of Sharing Knowledge 5-38

Foreword: Project Approach Study Group Catalog

Lilian G. Katz
University of Illinois at Urbana-Champaign

This Catalog accompanied the Project Approach Study Group's presentation at the 1998 annual meeting of the National Association for the Education of Young Children (NAEYC) in Toronto, Canada. As in the first Project Approach Catalog, published in 1996, the project summaries of this 1998 issue indicate the range of locations, settings, age groups and mixes, and project topics with which the Study Group members have been working.

A variety of issues of common concern to the group are addressed in the articles included in this Catalog. These include the phases of project work, project topic selection, the value of drawing in projects, introducing investigation skills with a mini-project, involving special needs children in projects, engaged learning and standards of work, and helping students at various levels of professional training to learn how to implement the Project Approach.

In honor of the special occasion of meeting in Toronto, NAEYC's first annual conference outside of U.S. borders, this Catalog also features the rich and instructive implementation and research on the Project Approach taking place in Canada. As can readily be seen from this special section on the Canadian experience, there is much for all of us to learn from their practice and research.

The project summaries show how preschool and primary school children can fruitfully investigate a variety of topics. Even though all the projects described follow a basic pattern of phases of project work, the experiences and accomplishments of the children are determined and shaped by those directly involved.

The section on the Internet is included to bring to your attention the various ways the Internet, Web sites, and listservs can support your efforts and facilitate communication with others facing similar kinds of questions and challenges. As the section on available resources shows, the literature and materials related to the Project Approach continues to grow steadily.

We welcome your comments and suggestions for the next Catalog, and look forward to hearing about your efforts and experiences in using the Project Approach.

Section 1
Thoughts on Projects

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The Project Approach in Action

Sylvia C. Chard
University of Alberta, Canada

Projects, like good stories, have a beginning, a middle, and an end. This temporal structure helps the teacher to organize the progression of activities according to the development of the children's interests and personal involvement with the topic of study.

During the preliminary planning stage, the teacher selects the topic of study (based on the children's interests, the curriculum, the availability of local resources, etc.). The teacher also brainstorms her own experience, knowledge, and ideas and represents them in a topic web. This web will be added to throughout the project and used for recording the progress of the project.

Phase 1: Beginning the Project

The teacher discusses the topic with the children to find out what experiences they have had and what they already know about it. The children represent their experiences and show their understanding of the concepts involved in explaining them. The teacher helps the children develop questions that their investigation will answer. A letter about the study is sent home to parents. The teacher encourages the parents to talk with their children about the topic and to share any relevant special expertise.

Phase 2: Developing the Project

Opportunities for the children to do field work and speak to experts are arranged. The teacher provides resources to help the children with their investigations; real objects, books, and other research materials are gathered. The teacher suggests ways for children to carry out a variety of investigations. Each child is involved in representing what he or she is learning, and each child can work at his or her own level in terms of basic skills, constructions, drawing, music, and dramatic play. The teacher enables the children to be aware of all the different work being done through class or group discussion and display. The topic web designed earlier provides a shorthand means of documenting the progress of the project.

Phase 3: Concluding the Project

The teacher arranges a culminating event through which the children share with others what they have learned. The children can be helped to tell the story of their project to others by featuring its highlights for other classes, the principal, and the parents. The teacher helps the children to select material to share and, in so doing, involves them purposefully in reviewing and evaluating the whole project. The teacher also offers the children imaginative ways of

personalizing their new knowledge through art, stories, and drama. Finally, the teacher uses children's ideas and interests to make a meaningful transition between the project being concluded and the topic of study in the next project.

This summary outline has explained some of the common features of projects, but each project is also unique. The teacher, the children, the topic, and the location of the school all contribute to the distinctiveness of each project.

Issues in Selecting Topics for Projects

Lilian G. Katz
University of Illinois at Urbana-Champaign

Sylvia C. Chard
University of Alberta, Canada

Teachers have the ultimate responsibility for selecting topics for the projects undertaken by their pupils. But the number of possible topics for projects is so large that it is probably a good idea to have some bases for deciding whether those selected are appropriate to the children's intellectual development and worthy of children's time and energy. Furthermore, to support good project work teachers must often undertake extensive preparation, study, and exploration.

There are many general factors to consider when determining the appropriateness of a topic. Among them are characteristics of the particular group of children who will carry out the work, the larger context of the school including its wider cultural community and physical surroundings, the availability of related local resources, and the teacher's own knowledge and experience related to the topic.

Other important criteria for project topics include their potential interest to the children, their possible contribution to children's sense of competence in dealing with and understanding their own daily experiences, and their possible contribution to later learning. However, it is a good idea to keep in mind that predicting which topics will work well is not easy! Many experienced teachers have been surprised by topics they initially had doubts about that turned out to be beneficial, and vice versa.

Children's Interests

Extensive experience working with teachers implementing the Project Approach all over the world suggests that their first consideration in topic selection is usually the children's actual or potential interests. However, using children's interests as a starting point in topic selection raises some complex issues. While the strategy of responding to children's expressed interests can often yield appropriate and enriching topics, it also presents several potential pitfalls.

The first issue this strategy raises is the question: What does it mean to say that a child or group of children, or even a whole class, is "interested" in a topic? The term "interest" in this context is not entirely clear. Interests can be of relatively low value; Wilson (1971) gives the example of a young boy in his class whose main "interest" for some time was how to pull the legs off a fly!

It is often hard to determine whether "interests" might be passing thoughts, fleeting concerns, phobias, fetishes, obsessions, or occasionally, a topic nominated by a child whose main desire is to please or impress the teacher.

Second, just because an individual or group expresses interest in a given topic (e.g., dinosaurs or pirates) does not mean that the topic deserves to be supported and strengthened by the serious attention of the teacher. It may happen that children become interested in pirates after having seen an entertaining movie about them. In such cases the children can be given opportunity for spontaneous dramatic play involving pirates; they can be encouraged to discuss their reactions to the film, and perhaps create drawings and paintings about them. But such interest does not imply that an in-depth *investigation* of the topic of pirates is in their best developmental, educational, or even moral interests. We are suggesting that there is an important and useful distinction between (a) providing opportunity for child-initiated spontaneous discussion and play around a topic, and (b) the teacher investing high energy in organizing a long-range effort focused on it, and thereby according the topic greater value than it warrants.

Third, we suggest that the topic should reflect our general commitment to taking children and their intellectual powers seriously and to treating them matter-of-factly as serious young investigators of worthwhile phenomena. Our experience of working with many teachers on projects suggests that it is easy to underestimate children's capacities to find the persistent hard work involved in close observation of everyday phenomena satisfying and meaningful.

Fourth, one of the responsibilities of adults is to educate children's interests. Children's awareness of the teacher's real and deep interest in a topic—for example, the changes in the natural environment over a six-week period—is likely to engender in them some level of interest in the topic as well.

Finally, in a class of twenty or more children, the number of possible "interests" is too large to address in any single year! How can the selection be made? Again, the teacher carries central responsibility for major decisions about the activities of the children, including selecting the project topics.

Exciting and Motivating Children

Sometimes adults promote exotic and exciting topics for projects in the hope of capturing or motivating children, especially those who often seem reluctant to join in the work of the class. For example, projects revolving around the rain forest undertaken in schools on the northern plains of the United States may very well entice young children into enthusiastic participation. We have observed many projects focused on medieval castles in countries where there are none, and the projects usually achieve the children's animated participation.

Similarly, we know of several teachers who have responded to young children's lively spontaneous discussions about the sinking of the Titanic that were stimulated by a

movie and television documentaries. While their interest was certainly palpable, the topic does not lend itself to first-hand investigations. Reading good books on the topic and being involved in discussions through which the teacher helps them interpret the new knowledge would be more appropriate in such cases. Furthermore, though such topics do no harm, our experience indicates that young children can be just as absorbed and intrigued by close observation and study of their own environments, whether they are prairies, corn fields, apple orchards, or a nearby bicycle shop.

Children do not have to be fascinated, spellbound, enchanted, or bewitched by a topic. Indeed, one of the main aims of project work is to strengthen children's dispositions to be interested, absorbed, and involved in in-depth observation, investigation, and representation of worthwhile phenomena in their own environments.

Furthermore, if the topic of a project is an exotic and therefore remote one, it is difficult for the children to offer predictions, hypotheses, and questions and therefore contribute to the project's direction and design. In principle, the less first-hand experience the children have in relation to the topic, the more dependent they are on the teacher for the ideas, information, questions, hypotheses, and planning that constitute the essence of good project work. Young children are indeed dependent on adults for many important aspects of their lives. However, project work is that part of the curriculum in which children are encouraged to take initiative in setting the questions to be answered, influencing the direction of the work to be undertaken, and accepting responsibility for what is accomplished.

Along similar lines, topics are sometimes chosen because they are expected to amuse or even entertain the children. Such topics are thought by teachers to stimulate children's imaginations (e.g., The Little Mermaid, teddy bears, the circus). However, these topics are more fanciful than imaginative; they are unlikely to provide contexts for direct investigation and observation. In good project work children have ample opportunity to use and strengthen their imaginations. Their imaginations are challenged when they make predictions about what they will find on a forthcoming field trip, when they predict the answers to their interview questions, and when they argue with each other about possible causes and effects related to the phenomena under investigation. Children's imaginative powers are stimulated and strengthened during the early phases of the project as they share and represent their own memories related to the topic, and make up their own stories related to them (e.g., stories of actual incidents on a tricycle, or fictional stories of bike rides).

Optimal Use of School Time

Concern for optimal use of school time includes assessing the appropriateness of a topic in terms of whether the children are likely to be able to explore it outside of school. Inasmuch as time and energy are given to the work of the project, teachers may need to decide not only that the topic is worth close study, but that such study is unlikely to occur outside of the school.

On the other hand, some teachers select topics with the intention of "sneaking" learning into the children through a so-called hands-on activity "while they are not looking," so to speak. Thus a teacher might initiate a project on "The Dentist" as a way of getting the children to remember the basics of dental hygiene. If dental hygiene is an important topic, it should be addressed directly, in its own right, and not as a project. Not everything that is important for children to know and learn is appropriate for project work. However, a close-up investigation of what goes on in the dentist's office, the tools and procedures used, and so forth could be a good project topic.

Diversity Concerns

Diversity of experiences. In some classes, the diversity of the incoming pupils' experiences might be so great that it would be beneficial to begin the year with a topic the teacher believes is familiar to all children. A sense of community in the class is more likely to develop when all the children have sufficient experience related to the topic to be able to participate in discussion with some confidence, and to be able to recognize and recount their own relevant experiences. As the school year progresses and children become adept and accustomed to project work, they can more readily appreciate the fact that individuals and groups have different experiences, backgrounds, and interests, and prefer to work on different topics or sub-topics. In this way they can learn to share with the whole class what each of them has learned about his or her own topic. The diversity of work can stimulate and deepen children's appreciation and prizing of differences in experience, interests, and abilities among their peers.

Diversity of cultures. The Project Approach is a useful way to respond to diversity of cultural backgrounds within the group of participating children. However, we find it useful to make a distinction between a child's *culture* and a child's *heritage.* The former refers to the current day-to-day experiences and environment of the children; the latter refers to historic and ancestral attributes associated with their origins, ancestors, and families. In the early years projects are most likely to be enriching if the topics are taken from the children's *culture* rather than *heritage,* though aspects of the latter can and should be introduced to the children in other parts of the curriculum. Not all of the topics that are important for children to know about are suitable for project work.

Preparation for Participation in a Democratic Society

One important consideration in topic selection is our commitment to helping children become competent participants in a democratic society. In the service of this goal, good topics are those that deepen children's understanding, knowledge, and appreciation of the contribution others in the wider community make to their well-being.

Second, one of the many benefits of project work is that within the classroom itself contexts are provided in which many processes and skills useful for participation in a democracy occur. Good project work provides contexts for developing agreements on actions to be taken, sharing responsibility for carrying out plans, resolving conflicts about

observations and findings, making suggestions to one another, prizing the different ways individuals can contribute to the total work accomplished, and so forth. Topics that allow for close-up first-hand investigation are more likely to lead to children's vigorous discussions and debates than are remote and abstract ones.

Relationship of the Topic to Subsequent Learning

In many cases, the knowledge gained by children working on a given project would be learned or "picked up" later on in other ways. For example, all children eventually learn the basics about the behavior of shadows, or about what goes on behind the scenes of a supermarket. Thus one could ask why these might be worthwhile topics for young children. (Note that the opposite is also true: much that is learned through formal instruction in school that is thought to be essential to later life or to "cultural literacy" is forgotten soon after the instruction is over!) We are not claiming that the process (e.g., of studying the behavior of shadows) is more important than the new knowledge. We suggest that educators at every level are responsible equally for the value of the processes *and the content* involved in children's work. Though we are not primarily concerned with a particular product or pre-specified knowledge-acquisition outcome, all of the kinds of learning we are concerned about—knowledge, skills, dispositions, and feelings—should be addressed while investigating worthwhile topics. While project work provides pretexts, texts, and contexts for strengthening a wide range of important skills and dispositions, ideally these experiences occur in the course of investigating worthwhile topics.

Delicacy of the Topic

Some topics are potentially delicate because of their religious or highly personal implications, or because they might in some way offend some of the families served by the early childhood program or the school. Some topics might also be delicate in the sense that they touch on matters about which individual children may not want to share their experiences. For example, some children may not want to talk about their own houses or even their own families. The teacher can evaluate the potential delicacy of a topic as she comes to know the children well.

Clinical Considerations

Occasionally a teacher is responsible for an individual child or small group of children whose personal situations are such that a topic ordinarily not particularly appropriate would be selected in order to address the special case. For example, you might have a child concerned about military dangers faced by her parent serving in the armed services. Even though it might not be a familiar topic to all the others in the class, a teacher might introduce some relevant activity to encourage that individual child to share what she knows of such matters. On the other hand is the example of many teachers of young children supporting them in a detailed study of the local hospital. On occasion it might be the case that a child has had a very recent traumatic experience there—perhaps involving the death of a loved one

or a frightening hospitalization experience of her own—suggesting that the study of that topic might best be postponed until a later time.

Curriculum and Accountability Requirements

It is a good idea to examine carefully in advance of selecting project topics what knowledge, skills, and other subjects and topics are required by the state or local educational agencies' curriculum or achievement guidelines. Most official curriculum guides are cast in such broad terms that it is invariably possible to select good project topics from among the lists of knowledge and concepts mandated or recommended.

Occasionally teachers say they are conducting particular lessons because of state or district demands, even though no such requirement actually exists. On the other hand, sometimes teachers claim they are prevented from introducing a certain project topic—often explained as set aside for other grade levels—even though no such restrictions are actually there. In any case, checking the relevant official requirements can often ease teachers' accountability pressures.

Making the relationship between the topic of the project and the prescribed curriculum requirements explicit for the parents can help reassure them that their children's education conforms to official guidelines.

A Tentative List of Criteria

Based on the issues raised above, we offer a tentative set of criteria for topic selection.

A topic is appropriate if:

1) relevant phenomena are directly observable in the children's own environments;

2) aspects of it are within many children's experiences, but not necessarily all the children who will be involved in the work;

3) first-hand direct investigation of important aspects of the topic is feasible (and presents no potentially dangerous situations);

4) local resources (e.g., field sites and experts) are favorable and readily accessible;

5) it has good potential representation in a variety of media (e.g., role play, construction, graphics, multidimensional models, graphic organizers, etc.);

6) parental participation and contributions are likely and parents can become involved fairly easily;

7) it is sensitive to the local culture as well as culturally appropriate in general;

8) it is potentially interesting to many of the children, or the topic is one that adults consider worthy of developing the children's interest in;

9) it is related to curriculum goals of the school, district, etc., and the knowledge and skills gained contribute to meeting demands for accountability;

10) it provides ample opportunity to apply basic skills (depending somewhat on the ages of the children);

11) it is *optimally* specific—neither too narrow (e.g., a study of buttons or of the teacher's own dog), or too broad (e.g., "music" or "the seasons"). However, the narrow topics could provoke good mini-projects, and most broad topics can provide some of the optimal specificity following webbing and discussion with the children.

As can be seen in the examples of projects included in this catalog, the number of potential topics worthy of children's effort and of potential interest to them is almost unlimited.

Reference

Wilson, P. S. (1971). *Interests and the discipline of education.* London: Routledge & Kegan Paul.

Drawing in the Context of a Project

Sylvia C. Chard
University of Alberta, Canada

Introduction

Drawing greatly enhances project work for children at all ages. Most work products, whether they involve writing, diagrams, or other forms of representation, are more interesting and informative when accompanied by drawings. In addition, the process of drawing itself is often instructive.

Drawing in project work is mainly draughtsmanship, or technical drawing, whose purpose is to convey factual information. However, there are also opportunities for the more artistically expressive kinds of drawing. In the course of a project children can draw for a variety of purposes throughout the three phases of the work. In this paper, several different kinds of drawing and their purposes are examined in relation to the development of projects.

Sources of Ideas for Drawing

Information represented in drawings can come from three main sources in the context of a project: memory of past experience, present reality, and creative speculation. Drawing in each of the three phases of project development generally taps into these sources of information: Phase 1 is more concerned with past experience, Phase 2 with present reality and observations, and Phase 3 with creative speculation.

Phase 1: Beginning a Project

In the first phase of a project when the children are discussing their own experiences, the representations that they draw are inspired by memories. The experiences they represent may be as recent as last week's shopping trip, or as distant as an airplane journey two years earlier. Drawing from memory often lacks specific detail, is simple, impressionistic, and approximate. Whatever the memory, many children will have difficulty remembering details to represent. It is usually easier to draw an item or process from observation than from memory. However, the data reduction involved in representing a memory can still serve the child and teacher well in reflecting the child's initial knowledge and experience with the topic of study. Paradoxically, drawing from memory can help many young children articulate complex ideas. For example, in the first phase of a project on pets, one five-year-old child drew two people, a car, and a cat in a box. Through his drawing he was able to explain the events depicted. He described how the family cat was being taken to the vet for shots and how his father asked him to accompany him to talk to the cat on the way and to comfort it

because it was usually unhappy in the car. The drawing greatly helped the teacher and child together to reconstruct the scene and to describe it in words. This process helped the child share his experience with the other children and to write a suitable caption for his drawing. It is only when the details of such a story are clear that the teacher can gain insight into the child's understanding of the topic as a result of the experience.

Rich discussions occur when children are encouraged to share their experiences in detail. As the teacher invites children to explain the details of experiences represented in their drawings, he or she provides an active model of the careful and interested listener. This model helps the children learn to question each other in a similar way. The process of verbal sharing has also been described by Gallas (1994, pp. 15-16) as contributing to "the complex process that teachers go through to build a powerful, inclusive classroom community." This community-building is an essential aspect of good project work. Children will talk about the topic of study by themselves, at recess, after school, and at home with their parents because they are interested in it. The more the details in drawings are discussed at "sharing times" in the classroom, the easier it is for the teacher to help the children identify and discuss areas of confusion or gaps in their understanding. These discussions then provide the bases for formulating questions for later investigation.

The drawings completed in the early stages of a project represent children's early understanding of the topic. Early drawings can be compared with those of much more detail produced later in the project. By examining the drawings, both teachers and children can appreciate the evidence of progress made in understanding. A sequence of drawings completed at different times during the project can give children props or cues to help them discuss their learning in conferences with teacher and parents.

Phase 2: Developing a Project

In the second phase of the project the children extend and deepening their knowledge of the topic with a shared perspective from primary and secondary sources of information. During this phase the children's greater experience with real objects, events, processes, and roles is the major source of information for drawing. On field visits the children make sketches to remind them later of what they saw and to use as bases for further illustrations of the phenomena being studied. Because of time constraints in the field, these sketches are usually drawn economically, including only the most salient and significant details. Field sketches involve looking closely at the objects and people studied and making judgments about the parts of an object, the stages in a process, or the sequence of actions taken by a person. Sketches focus children's attention at the field site, which enriches and facilitates later discussion on return to the classroom.

Back in the classroom the children can elaborate their drawings with reference to photographs and secondary sources of information. They can undertake sustained observational drawing of artifacts collected during Phase 2. Increasingly detailed knowledge can be represented as it is collected. Sustained drawing enables children to study the nature of things—shapes, colors, textures, and other attributes. It encourages children to examine

the relationship of parts to the whole of objects. Processes and roles can be represented in an "event map" (Hinchman,1997, p. 156), or drawing in which time and location are identified and labeled with words and measures.

Drawings of many different kinds can be included in project work. Sometimes a drawing can be simply executed at one sitting, at others it may be revisited and added to several times before it is complete. In the case of a revisited drawing, it may be of interest to the teacher as documentation of the progress made by the child. Photocopies made at different times in the drawing process can record the progressive addition of detail leading to the finished product. Such documentation is helpful to other children interested in this kind of long-term work.

Sometimes a drawing may stand alone with only a brief caption to indicate its significance to the study. At other times, there may be word labels added to a drawing indicating the technical terms for the parts of the object, the amount of time taken for processes depicted, or weights to indicate amounts of material shown, and so on. In project work there are many opportunities to mix media and means of communication to render the representation more accurate and informative. As the children grow older they can undertake increasingly complex combinations of representational strategies.

Most of the drawing in the second phase of a project is observational. However, it is important to note that younger children will mix observational drawing with memory or symbolic drawing, adding in figures or objects which they want represented there as well. For example, a group of five-year-olds drawing a bicycle in their classroom added suns to their pictures and people riding the bicycles. To judge from the children's conversation at the time, the tendency to provide these additions was probably provoked by the power of their association of bicycles with the outdoors and being with other people. The difference between the quality of the drawing of the bicycles and the quality of the added information was marked. The suns and added people tended to be more symbolic representations than realistic (e.g., a typical circle with rays for the sun and primitive "hairpin" or "sausage" figures for the people), in sharp contrast to the more mature and informative drawing of the bicycles themselves.

Drawing from observation is informative for the child. Close observation leads the child to notice details and discover relationships. Drawing can be further encouraged to increase analytical thinking. Throughout the range of different kinds of drawing, from drawings labeled with words to structural analyses labeled with short paragraphs to exploded drawings (drawings in which parts of an object are separated and enlarged), there are many ways for children to learn about the function of the parts of an object, the role of a person, the sequence of stages in a process, the layers in a cross-section, etc. Technical drawing of this kind is used in science text books—for example, in engineering or medicine—at every level of study because words and numbers alone are insufficient for conveying detailed and complex information. Even when an entity is too small to see with a microscope, scientists still speculate about structure in drawings and three-dimensional models.

Phase 3: Concluding a Project

In the third phase of a project most of the questions asked earlier in the study will have been answered in the course of field work or research with secondary sources of information. Although the time must come to bring the work of a project to a close, it is not because every question will have been answered and every research avenue exhausted. In fact, it is important for children not to think that they know everything there is to know about a topic by the end of a project. On the contrary, from project work children learn how the answer to any question provokes us to ask questions at a new level of understanding.

In the third phase of a project, some particularly interested children may want to speculate on what the answers to some of their new questions might be. An investigation of stores and markets today may give rise to questions about other kinds of buying and selling in the future. A study of rapid change over time lends itself naturally to speculation about the future. Predictions can be well expressed in speculative drawings. A study of a building, newspaper, or business may prompt designs of how things might look in a future time or other place.

Drawings, especially for the younger children, can be very helpful in enabling them to tell what they have learned. In one kindergarten class the children paired up with their fifth-grade buddies and shared three pictures they had selected from their project folders to explain what they had learned through their project work. The older children were to write what the young children told them about the items in the pictures. Elsewhere in a first-grade class, the children were invited to draw and label a picture to show as much as possible about what they had learned.

Drawing can also be decorative or abstract. It is helpful to have folders in which older children can keep their individual pieces of project work throughout the project, both completed items and pieces which are still being worked on. The covers of these folders can be decoratively illustrated with items of particular interest to the children. Sometimes children's work can be specially featured on paper with illuminated borders made up of miniature drawings depicting details referred to in the text. This kind of drawing makes the material more memorable to the child as well as making the content of the work more accessible to other children. Illuminated borders are sometimes designed by teachers for children's work, but in the context of a project, the process of designing and making the border can itself provide an important opportunity for the child to consolidate his or her own learning.

Creative written work such as poems or descriptive prose essays can sometimes benefit from an accompanying piece of art. This may involve the kind of drawing which is less informative or decorative than it is abstract and impressionistic. Such art may be primarily expressive of personal feelings or impressions rather than representing information.

Conclusion

In summary, project work drawings may be of many different kinds: rough sketches, plans for future work, parts of larger composite pieces of work, or scenery for a dramatic presentation. A few drawings may be discarded, having served their purpose (like rough drafts or "scratch" notes). Many drawings will be intended for worthier final destinations, taking their place in a book or report, on a poster, or in the child's individual project folder. They may be given to informants in recognition and appreciation for their help, or displayed in the library for others to learn from and enjoy. Above all, drawing for projects should be regarded as important school work, not taken home each day to disappear from the learning environment of the classroom but kept there until the project is over. Then a collection of their most memorable work can be sent home with the children so they can share it with their families.

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Teaching Project Skills with a Mini-Project

Dot Schuler
Grafton Elementary School, Grafton, Illinois

As the children shared their finished investigations at our group meeting today, they were extremely proud of their accomplishments in just two weeks! Our mini-project was now complete and ready for parents to see the following evening. I remember how apprehensive I had been about beginning a project this year. Many of the children in my class of second-graders this year have social, emotional, and/or academic problems. The first few weeks of school, I had debated about whether to work on social skills and classroom procedures longer than usual, or simply to jump in and begin a project. My friend and colleague, Anne-Marie Clark, sent me some appreciated advice via e-mail: "Sometimes I think it helps to think of them as having minds that are still asleep. They haven't had the opportunity to experience the exhilaration of learning something interesting yet."

Having been engaged in project work with my second-graders for three years now, I was confident that the children would respond with avid interest and participation once a project got underway. However, instead of engaging in a full-fledged project, as I usually do, I decided to begin with a "mini-project," in which the children could learn about and practice the main components of a project, and practice their social skills and classroom procedures, as well.

The children and I had a class meeting in which we discussed the "mini-project" topic: "Our School Playground." They understood my reasoning behind first doing a "mini-project," and they appreciated my frankness in explaining that I wanted each cooperative learning team to learn one or two forms of representation so that they could teach their peers about it.

We began with a brainstorming session, with children thinking and recording things that came to mind about the playground. We grouped these things into categories to create our class web. Next, each cooperative learning team listened enthusiastically as, one at a time, the children shared personal stories about their experiences on the playground. Finally, after answering several open-ended questions about the playground and documenting our ideas on charts, we were ready for our first field experience.

After we discussed the expectations and purposes of sketching and note-taking, we set out for the playground with our clipboards and pencils. For about 45 minutes, we sketched items of interest and took notes about various things: the shed, tree, tether ball pole, and so forth. The teacher's aide and I, also equipped with clipboards, circulated and modeled observation skills for the children. Upon our return to the classroom, we shared our work. Each child, one at a time, contributed an item from his or her notes as I recorded it on a class

chart. We continued in this fashion until all notes were documented. Then we shared our sketches and talked about them with each other. Most of the notes were simple, unobservant notes, such as walls, trees, and windows. Many of the sketches lacked detail.

The following day, we had another class meeting. This time, we discussed how to use the five senses to become better observers. We talked about our rulers and how we might use them to collect data. We returned to the playground and spent more time on sketching and note-taking. Some of the children chose to add more details onto their previous sketch; other children decided to start over. The children used their rulers to measure items in feet. When we documented our notes on the class chart again, we added more interesting items, such as: wall was about 9 feet, fence has 16 poles, yellow ribbons around air conditioner, 8 stairs to climb. Although our notes and sketches definitely had room for improvement, at least the children were developing an awareness of the expectations of using observational skills and the importance of recording items of interest. Our sharing time was invaluable as the children learned from each other:

- Labeling the sketch of the tether ball pole with the colors of the pole, ball, and boundary lines on the blacktop helps when publishing a sketch in color.

- Numbering your notes adds organization.

- Being observant means including interesting details in notes and sketches.

- Using complete sentences is one way to record notes; using words or phrases is another.

I decided to think of a question for each cooperative learning team to investigate, explaining that when they began their first major project, they would formulate their own questions. These were the questions I proposed, one to each team:

1. How can children stay safe on the playground?
2. What are the favorite things to do on the playground?
3. What would you want our playground to look like if you could change it?
4. How do most children get injured on the playground?

Discussions were held with each team, asking them how they might find answers to their question. They could easily see that books would not help; they decided they would need to ask other people. I then talked with each team about their investigation and which forms of representation they should use. Team 1 used a small web on which to make a first draft of ways to stay safe on the playground. Team 2 began writing the first draft of a questionnaire that would be handed out to three students in each classroom in the school, asking children how they had been injured. Team 3 began the first draft of a Venn diagram, labeled "Playground Now" on one side and "Playground Later" on the other. Team 4 prepared the first draft of a questionnaire, asking children their favorite thing to do on the playground. The teacher's aide and I helped the children as they enthusiastically began to work on these new skills. Very few social problems occurred each morning during project

work. The children understood that they were to work with their team, and that they could look forward to choosing friends to work with on their first real project. They were involved in their work and anxious for their peers to see the results. Because project work encourages group interaction and choice, children become aware that their input is important, and the resulting ownership in their work builds confidence in their ability to make a positive contribution to the topic of study. Facilitating them in their work, listening to their comments and suggestions for each other, hearing their problem-solving, documenting their progress, and realizing that they were being intellectually challenged, reminded me of the lack of confidence I had had in their abilities to carry out a project.

Team 1, after finishing the first draft of their web, which I proofread for them, used a large sheet of poster board to publish the web. They looked around the room for a circular object to trace for the parts of the web, printed their safety rules neatly in pencil first, then traced with markers. After completing the web, they decided to make posters to display in the building. They made circular posters, gluing red construction paper strips diagonally across each poster, in order to show what actions would cause accidents.

Team 2 published and distributed their questionnaires and began constructing a bar graph on which to represent the results. Then, they decided to make a mural picturing the different types of injuries on the playground. One of the children suggested placing one or more star stickers underneath each picture to show how many interviewed children had been injured in that manner.

Team 3 wanted to publish their Venn diagram on a large poster, so they found a large circular object (the trash can) to trace and, using pencil first, created a Venn diagram which was traced in colorful letters. Next, they decided to make a mural. They placed it horizontally, drawing a line from end to end down the center. On one side, two of the children drew the "Playground Now"; on the other half, two children drew the "Playground Later." They labeled the items on each playground so that everyone would be able to identify them.

Team 4, after publishing and distributing their questionnaires, began making a pictograph to show the results. They discovered that the top three favorite things to do on the playground were basketball, soccer, and tether ball. They decided to make a mobile to represent these top three favorites. The mobile was titled: "Favorite Things to Do on the Playground." They cut out each representative sports ball from construction paper, adding details with markers to make them look realistic, and hung them from the title with string.

During learning centers throughout the mini project, several children published their sketches on drawing paper, using crayons, colored pencils, and markers. Published sketches were displayed in the room and in the hall. Learning centers were also used to teach and practice curricular skills:

- In the spelling center, children searched for words with "sh," "ch," and "ck." They then dictated a sentence about the playground to the teacher, using one or

more of the words. At our group meeting, we shared the sentences and then displayed the chart in our room.

- In the reading center, each child thought of a noun on the playground and dictated a complete sentence about the playground, using the noun as the naming part of the sentence. After sharing the sentences at our group meeting, we displayed the chart.
- At the writing center, the teacher prepared a paragraph about our experiences on the playground, and the children proofread one sentence per day, copying it correctly. The mistakes included punctuation errors and misspelled spelling words. At the end of the week, they turned in their completed and corrected paragraph for assessment.
- At the math center, children wrote first drafts of story problems, either addition or subtraction, about the playground. The problems were published and illustrated, then solved by their classmates. After the problems were solved, they were compiled in a book.

At culmination, the parents and children watched a brief movie of a project completed by the second-grade class from the past year. Then the children enthusiastically presented the displays from our mini-project. Even though this project had been more teacher-directed than a true project should be, I could see that the children were now ready for a full-fledged project. This time, they will be entrusted with more choices of their own. Those choices will create the enthusiasm for learning that occurs during project work. Curricular skills grow when the children are engaged in an in-depth study of their immediate environment. Social skills and positive dispositions for learning grow naturally in an atmosphere of togetherness in learning. The children feel the challenge to use and share their intellectual skills. As we initiate our first *real* project on "Animals," I am finally beginning to feel the awakening in our classroom!

Projects in Inclusive Early Childhood Classrooms

Rebecca K. Edmiaston
Regents' Center for Early Developmental Education, University of Northern Iowa

As increasing numbers of children with disabilities participate in community-based early childhood programs and public school classrooms, teachers will need to adapt project work to meet the special needs of these children. Projects are a critical component of the curriculum in many early childhood programs, especially those implementing the Reggio Emilia approach. Projects encourage children to engage in in-depth study of selected topics. Project work is particularly well suited in at least five ways to meet the needs of young children with disabilities who are integrated or included in early childhood classrooms.

1. Focus on collaborative efforts. Collaboration is the backbone of successful inclusion. The collaborative teamwork necessary to meet the needs of young children with disabilities is exemplified in projects. Through cooperation and collaboration, early childhood teachers, early childhood special educators, caregivers, children, and families can design and implement successful inclusion experiences in which the focus is not on individual effort or a child in isolation. Rather, the focus is on group efforts and on relationships with other children, teachers, family, and the community.

The first step in implementing effective project work is to develop a classroom community in which mutual respect and cooperation are continually practiced. Children who see their classroom as a community are more likely to develop a sense of obligation to others. Positioning children with disabilities so that they can be at the table, on the floor, etc. with classmates promotes interactions between them and their non-disabled peers. Classmates will often identify ways to include children with special needs. A kindergarten teacher of an inclusive classroom describes her classroom community in this way:

"We seem to have built a community within our building where no one is different and no one is excluded. If we're planning a project, sometimes the kids will say 'Well, what about (child's name)? How is he going to fit into this project? What can he do?' knowing that there may be a physical challenge or a visual challenge for this particular student. They come up with ways that he or she can be part of that activity and be included in some part of the experience, and they think of that even before I do. They don't need to have me helping that conversation along. And the reason is because we've developed a community where they're comfortable—they want to have everybody included and have everybody doing everything" (Edmiaston & Fitzgerald, 1998).

Educators in inclusive classrooms view all children as competent and capable. This strengths-based image of children enables both teachers and children to see everyone in their classroom, including those with disabilities, as being valuable members of the classroom

community. Children with special needs can and do make important contributions to projects. For example, children in a kindergarten classroom had become interested in shadows and wanted to begin a new project. They set up a shadow studio in the corner of the classroom by hanging dark gray sheets from the ceiling. However, a few children in the classroom weren't quite certain that they were ready to stop their work on dinosaurs. When Benjamin, a young child with limited cognitive ability, joined two children in the shadow studio, he told them that his hand's shadow was a T-Rex (a Tyrannosaurus Rex). Immediately the other two children picked up on this theme. A few minutes later, Benjamin retrieved a plastic T-Rex and took it to the shadow studio to make more shadows. Later in the week several children decided that they would make dinosaur shadow puppets to use in the shadow studio. Benjamin's ideas assisted others in making connections between the dinosaur and shadow projects. In inclusive classrooms everyone has something to offer in projects.

2. Emphasis on children's interests. Projects emerge in relationship to children's interests. Taking children's interests seriously is at the heart of developmentally appropriate or constructivist education, according to DeVries and Zan (1994). By following children's interests in classroom experiences and activities, the teacher demonstrates respect for children and their ideas. Interest can increase children's engagement in learning experiences. Even as adults, our effort is often positively related to interest. Interest is particularly important in engaging children with special needs in learning experiences.

It may require careful observation for the teacher to identify children's interests. For example, in a class meeting children in an inclusive kindergarten were exploring "shoes" as a possible next project. To the casual observer, a young child with disabilities was squirming around on the floor looking at his feet and apparently was not engaged in the group discussion. His behavior probably would have been described as "off-task." However, his teacher recognized that he was tracing the lines on the soles of his shoes as the other children were identifying questions that they had about shoes. She pointed out to the children that he was examining the pattern on the bottom of his shoes. His activity captured the interest of the others, and they quickly began to examine their own shoes and those of their peers. As a result, several children became very interested in how patterns and different colors and words were imprinted on tennis shoes. Children made representations of the bottoms of their shoes, and some even tried to make their own shoes. The child with special needs was able to address one of his educational goals, identifying similarities and differences, through his interest in the different patterns he found on the bottoms of shoes.

3. Participation in diverse learning experiences. Projects include a variety of experiences and activities for children that address a broad range of developmental needs. They do not require that every child participate in every experience. Individual abilities are taken into consideration as projects are implemented in classrooms. Individual Educational Programs (IEPs) are required for all children who are receiving special education services. These plans identify individual goals and objectives for the child. The variety of learning experiences that children have the opportunity to engage in through projects supports children's mastery of individual goals and objectives. Children's IEP goals can be easily

infused into projects in ways that make the learning experience more meaningful and purposeful for the child. According to Edmiaston, Dolezal, Doolittle, Erickson, and Merritt (in press), IEP goals that reflect early childhood curriculum and classroom instructional practices facilitate effective inclusion. Goals and objectives such as "Benjamin will negotiate conflicts with peers by using appropriate verbal responses or requests," or "Julie will develop a tripod grasp and hand preference and use them consistently," can easily be infused into project experiences. Because projects extend over a period of time, children with special needs are not pressured by short time frames. Projects typically provide multiple opportunities for children to practice or repeat experiences—key strategies in special education instruction.

Projects also provide all children in the class the opportunity to make choices. Making choices empowers children and promotes self-regulation. Increased independence is an important goal of most special education programs. Young children with disabilities, as well as many of their non-disabled peers, may not understand what choices are available. Since projects are flexible, children have multiple opportunities to make choices and to specifically choose to engage in certain learning experiences or activities.

4. Small group instruction. Work in small groups, the primary grouping pattern in projects, provides a social context for meaningful discussions, collaborative problem-solving, and productive cognitive and social conflict resolution. Small group learning experiences will more likely ensure that the individual goals of children with disabilities are being met. Also, the small group context is the ideal environment for facilitating the development of social interaction of all children, including those with disabilities. Depending on the needs of the children in the classroom, the teacher may need to give special attention to grouping patterns and identifying the composition of the groups. Consistency in small groups provides the opportunity for children to form special relationships. Some children may be better partners for children with special needs than are others.

5. Documentation of children's learning. Documentation of children's learning experiences is an important component of project work. In Reggio schools, children's understandings are also expressed through a wide variety of symbols and graphic modes, what Malaguzzi (1993) called the "hundred languages of children." Children's expressions of knowledge through a variety of symbolic representations are recognized as valid documentation of children's learning. The recognition of children's multiple "languages" seems especially relevant to the needs of children with disabilities and may provide expanded means of documenting their development and the meeting of IEP goals and objectives as they participate in projects.

Conclusion

Projects can promote the effective inclusion of children with disabilities into early childhood programs. Project work enables teachers to address the diverse needs of children. In projects, children with and without disabilities can engage in learning experiences at their own level

to meet their physical, social, or academic goals. Projects allow teachers to implement both individually and developmentally appropriate educational experiences for all children in the classroom. Children who are learning together and learning to work together while engaged in projects are at the same time learning to live together.

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Projects, Engaged Learning, and Standards

Judy Harris Helm
Brimfield, Illinois

Many teachers in kindergarten and elementary schools today are confused and frustrated. As they read and hear more about brain research, active engaged learning, and emergent curriculum, they have come to value student-initiated learning and curiosity. At the same time, they are hearing about the call for standards and for setting high expectations for achievement. Accountability has become a prominent issue in many communities with a strong desire for students to develop a standard body of knowledge and skills. Some community members may see projects as contradictory to the recommendations for standards and expectations. Actually, the Project Approach as described by Katz and Chard (1989) is consistent with recent recommendations and research on school achievement. The solution that readily comes to mind is that teachers learn to do them both—follow the lead of children, engage them in learning, but still assure that required curriculum is introduced and mastered.

Recommendations for Active, Engaged Learning

Recommendations for active, engaged learning experiences are coming from many directions. Jones, Valdez, Norakowski, and Rasmussen (1994) summarized research and developed indicators of engaged learning to use as a compass in planning and evaluating educational reform. They describe a vision of an engaged learner as responsible for learning, energized by learning, and using strategic and collaborative strategies in the learning process. The tasks of engaged learning are challenging, authentic, and integrative or interdisciplinary. Learning experiences are engaging when they are interactive, generative, and the context of that experience is in a knowledge-building learning community which is collaborative and empathetic. Assessment in engaged learning is based on the student's performance, interwoven with the learning process, and uses equitable standards.

Many teachers who have experienced the vitality that projects bring into a classroom would recognize this description of engaged learning as typical of projects. Children become responsible for their own learning, plan and strategize how to find answers, collaborate to find solutions and information, integrate many content skills such as reading, writing, and math, and experience a knowledge-building community.

Application of Mind/Brain Learning Principles

An area of research and scholarship that has provided impetus for engaged learning is the study of how children learn. Caine and Caine (1997) identify twelve mind/brain learning

principles based on their review of brain research in combination with research on classroom performance. Many of these principles are observable in project work.

Principle 1. *The brain is a complex adaptive system.*

Projects challenge children to think by enabling them to do in-depth study at levels of complexity that often surprise teachers and parents. A study of a water treatment plant by four-year-olds resulted in discussions of primary and secondary treatment pools.

Principle 2. *The brain is a social brain.*

Projects encourage collaboration and sharing, talking and working together to solve problems. Building a fire truck out of a box resulted in two groups of children searching for a solution of how to make the lights look like a real fire engine's lights, and solving the problem as a team.

Principle 3. *The search for meaning is innate.*

Children are always trying to connect and make sense of the world, and projects which focus on their world enable them construct their own understanding of it. The Bicycle Project resulted in an ever-increasing understanding of how the bicycle worked. As children sketched and studied the parts of the bike, their drawing revealed a steadily growing understanding of how those parts worked.

Principle 4. *The search for meaning occurs through "patterning."*

As children participate in more and more projects they begin to get a sense of the principles of how their world works, the similarities of living things, how machines work, or how people help and support one another through their jobs and roles. There is a pattern to the project process itself. Children who have had a successful project experience will often request a teacher to make a web or begin to list questions and then ask their own question of "How might we find this out?"

Principle 5. *Emotions are critical to patterning.*

Projects involve children emotionally because they are based on children's curiosity and interest. Children are encouraged to explore and develop dispositions towards inquiry, learning, and the application of skills. An extreme level of persistence in problem-solving is often observed.

Principle 6. *Every brain simultaneously perceives and creates parts and wholes.*

As children study topics of interest, they often become fascinated with how items, such as radios, are made. They will take apart equipment and often follow that by building their own version of it in models or play environments. Three-year-olds were fascinated with the radio and literally watched with wide-open eyes as the cover was removed. They later spontaneously started making radios with the insides out of boxes.

Principle 7. *Learning involves focused attention and peripheral perception.*

This principle is often observed in the involvement of young children in projects. Some children may be deeply involved in finding out information, others may be involved in constructing, and some children may watch while doing other activities. As the project progresses, children reveal that they learned from each other. Often the watcher becomes the leader in the next project, demonstrating that not only was content information observed, but also skills of investigation.

Principle 8. *Learning is conscious and unconscious—helping learners make learning visible.*

The project provides many opportunities for children to make their learning visible to themselves and others as they web and revise webs, write questions for which they find answers, draw, and construct.

Principle 9. *Meaningful and meaningless information are stored differently.*

Projects are based on topics that are meaningful to children. Because they are following their own curiosity and answering their own questions, remembering what they learned is easy. Applying skills such as drawing or writing has a purpose and meaning. Dispositions are strengthened to use skills.

Principle 10. *Learning is developmental.*

There are many ways that children approach a topic so the topic becomes tailored to the developmental level of the individual child. Projects can also challenge children to do in-depth studies of topics that adults might not ordinarily think children would be interested in at a particular age, and encourage them to do elaborate thinking during the years of greatest impact on the brain.

Principle 11. *Complex learning is enhanced by challenge and inhibited by threat.*

Projects occur over a long period of time. Children are challenged but not hurried, exposed to in-depth knowledge about a topic based on their interest and curiosity.

Principle 12. *Every brain is uniquely organized.*

Projects result in so many different culminating events that children can be observed using a variety of modalities of expression and a variety of learning styles. A child may build a block structure of a parking garage. His knowledge and understanding of the garage and how it is managed can be seen in his vocabulary and play. Another child may draw pictures with detailed labels. Each approaches and is encouraged to learn and process his learning in his own unique way.

Standards and School Achievement

The Project Approach can be a vehicle for achievement of curriculum goals and for reaching standards of intellectual performance. The Project Approach is an approach, not a complete curriculum, and there are many activities going on in project classrooms including direct instruction, group instruction, and individual study. Projects provide unique experiences for

young children at an important point in their development. Projects can complement direct instruction of skills and provide a reason for applying those skills. In a study of first-grade children doing projects and units, children were more involved in reading and research in the project then in the teacher-directed unit (Bryson, 1994). Careful documentation by the teacher during the project process can capture the extensive development of skills, knowledge, and dispositions and provide an effective means for achieving standards of performance that we all want for our children.

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Bringing Project Work to a Community College

Sallee Beneke
Illinois Valley Community College, Oglesby, Illinois

Interest in project work has grown as educators have come to understand the contribution of active, engaged, meaningful learning to the early childhood curriculum. In response to this interest, Illinois Valley Community College has incorporated project work as a requirement in their two-year teacher training program. The Project Approach as part of this community college program is currently in its third year. Several practices to support student learning have proven helpful.

A course was added to the curriculum in which students are introduced to both the theory and practice of the Project Approach and documentation. Small groups of students conduct an in-depth project as part of the course and then prepare a panel to document the story of their project and their own growth. This personal experience helps form their notion of what constitutes a project and to develop an appreciation for teamwork and collaboration. Many students have preconceived definitions for the word "project." They often think of a project as a defined task. Conducting their own project helps them to construct a new meaning for the word "project" and to get a feel for curriculum which follows the student's interest. In these first experiences it is helpful to teach webbing and listing as described by Sylvia Chard in her practical guides. A general topic for these adult projects is selected by the instructor, and then each group follows the steps for webbing suggested by Chard. Students find the webbing process very useful and ultimately come up with a narrow topic that suits the interests of the members of the small group. For example, "Clothes" was chosen as the general topic for one class. However, after webbing and discussing their interests, these small groups investigated aspects of the topic that were very different from one another. One of these groups studied "Designer Labels" while another investigated "Dry Cleaning." Teaching them to periodically produce a series of webs helps them to reflect on the growth in their own knowledge through project work. It helps them see the value of collaboration. As one student said, "You come to realize that everyone's opinion does count. Everyone has different ways of thinking and different approaches. You can gain so much from another's ideas, and you can even expand from that."

Project work was also introduced to the curriculum in our small lab school. Students who are learning about project work in the Project Approach/Documentation course can observe at the lab school and see examples of children's projects developing. Samples illustrating the three phases of project work can be introduced into the lecture portion of the course as they develop. Following and discussing the evolution of a current project is a good way to help students begin to think about documenting children's work.

The experience of teaching at the lab school and taking part in developing a project with children also assists in understanding. We support them by offering half-hour weekly conferences with a Master Teacher and weekly staff meetings that include all teachers, student teachers, the Master Teacher, and the early childhood coordinator. Time is set aside to discuss the progress of the children and the developing curriculum. The first half of the semester focuses on other approaches, but in the last half of the semester, only project work is discussed.

Many of the students will be hired by employers who are looking for teachers who know how to implement thematic teaching. There is dissonance between the kind of teacher-initiated lesson planning that goes with thematic teaching and the child-responsive planning that comes with project work. We have handled this dissonance and our sense of responsibility to our students by requiring two different types of lesson plans in our program: teacher-initiated plans and child-initiated plans. In the beginning of the semester the student teachers are required to plan a variety of assigned and prescheduled lesson plans. Then, toward the middle of the semester, as they complete the requirements for the teacher-initiated plans, they begin to fulfill the requirement for the child-initiated plans. The child-initiated plans are required in the same domains of learning as the teacher-initiated plans, but they may be implemented at any time during the last half of the semester in response to the interest of a child or group of children. A teacher-initiated plan taught in the beginning of the semester might be a science activity to introduce the concept of animal camouflage to children. The student teacher might select it because she thinks it is a good thing for children to know. But in the last half of the semester, this same student teacher might hear a child ask, "I wonder what ants like to eat?" and then plan an experiment with ants and various foods. An insight into project teaching comes from this type of planning. It has been interesting to see that often, the overall topic chosen for the thematic teacher-initiated plans blends into a Phase 1 for the project work in the second half of the semester. Although this is not the type of naturally flowing project work that takes place in an individual teacher's classroom, at this point it seems the best solution to the difficult issue of providing our students with training that is high-quality and meets the requirements of employers in our area.

Students are introduced to the expertise and resources available in other areas of our community college. For example, in a project on cars, children were able to make daily visits the automotive lab at the college to conduct ongoing field work and to question experts. Similar project resources abound in other departments. Consider the potential for project research in the dental, nursing, and biology departments!

Representing understanding in a variety of media is an important aspect of project work. However, many students new to project work find a lack of experience with a variety of art media and methods problematic. This is particularly true when the art education in the student teacher's own elementary and high school background has been limited. We have found it helpful to collaborate with the faculty in the art department to assist these students. Art students can earn extra credit for making presentations at our staff meetings. In these presentations they demonstrate basic principles, methods, and techniques for working with

materials unfamiliar to student teachers, such as pottery clay. We have found this expertise very valuable.

Another helpful practice has been the development of a Resource Room where students can meet and work on documentation. Tools and materials for preparing documentation are available, including large work tables, foam core boards, cutting mats and instruments, a computer with desktop publishing software, an external hard drive for disks containing scanned copies of children's work, and a color printer. Students in our program are required to prepare a documentation panel as part of their teaching experience in the lab school. The panels prepared by the student teachers feature a "Window on a Child," "Window on a Learning Experience," and "Window for Teacher Self-Reflection." Cameras, film, and developing are available to the students when they are working in the lab school, and students are encouraged to use photographs in their documentation. This room and its materials support student teachers in fulfilling this requirement in a highly professional way.

An additional practice that supports students in learning the Project Approach is the development of small courses taught on-site at child care centers and preschools in our area. Credit for this course combined with credit for two other small courses can be used to satisfy the requirement for the Project Approach/Documentation course. It is our theory that students who are out in the field hesitate to enroll in a course for a variety of reasons: transportation, time, anxiety about their ability to handle a college course, fears about being among strangers. We have found that offering these smaller courses on-site attracts a diverse and interesting group to the Project Approach training. Students in a current course include teachers with graduate degrees, graduate students, and non-degreed teachers from local child care and preschools. They offer one another diverse insights and a shared sense of professionalism. Another phenomenon that has developed in response to this practice is a tendency for entire staffs of public school early childhood education programs, child care centers, or preschools to explore project work together. These groups have been able to collaborate and offer one another support between classes, as well as share insights and observations in class.

Helping Teachers and Preservice Teachers Learn the Project Approach

Eileen T. Borgia and Diane E. McClellan
Governors State University, Illinois

How do teachers learn project work? Teachers often learn new techniques on their own, by reading books and articles and studying videotapes now available on the subject. Many have attended workshops on project work at various conferences. However, it can be difficult for an individual to acquire the finer points associated with project work without kindred spirits to lend a sympathetic ear and help with suggestions.

To help teachers learn to incorporate project work into their teaching, several early childhood educators at colleges and universities are experimenting with a variety of ways to include project work in teacher preparation and inservice professional development courses. This article highlights the experiences of several teacher educators who are members of the Project Approach Study Group in Illinois. Others who are teaching the Project Approach in college-level courses are invited to post a discussion of their experiences on the PROJECTS-L listserv (see Section 4 for more information on PROJECTS-L).

The following presents the general features teacher educators may want to consider in teaching the Project Approach. This section is followed by four illustrations of approaches used by teacher educators in introducing teachers and preservice teachers to the Project Approach.

Considerations in Teaching the Project Approach to Preservice and Experienced Teachers

During a course or extended workshop, students in small groups of four to six participants investigate a topic of interest from their perspective as adult learners. They assume various roles, work together, and involve themselves deeply in the study. The documentation samples they prepare communicate what they learned and represent the types of curricular products their own students might be expected to make.

By having the opportunity to actually do a project, teachers experience a sense of timing and pacing of the phases, understand the rationale behind topic selection and family/community involvement, and learn the role of investigation and documentation. In addition, they develop empathy for their own students and for the trials and tribulations that a young learner might experience during project work.

When learners experience the Project Approach at an adult level, a stronger and more enduring understanding of the process results. Adult students' typically experience, on the one hand, a reminder of what it means to be a learner and, concurrently, a simulation of the learning process that provides them with insights they can take back to their own

classrooms. As Rogoff (1997) suggests, "teach the way you like to learn, not the way you like to teach." Many participants agree that the time teachers invest participating as a learner in a project is time well spent.

An additional advantage of participating as an adult team member in a project is that teachers receive a refresher course in cooperation. Sometimes, teachers who have been trained to be autonomous decision-makers forget how to use the kinds of social skills they expect their own students to practice. Skills such as cooperation, negotiation, following as well as leading, giving as well as taking, reaching consensus, contributing to a shared product, and so forth, are practiced and observed and experienced freshly. Many teacher educators find it helpful to include a discussion of cooperative learning principles and strategies during the introductory part of the course.

Finally, for teachers whose preparation and background were oriented toward child-sensitive, informal, open education, or progressive education, the transition to project work may come fairly easily. For practicing teachers and students whose preparation has focused on a more traditionally teacher-directed approach, an introduction to the philosophy and principles of the Project Approach may reassure them that achievement, basic skills, and project work are not mutually exclusive. Once teachers realize that the Project Approach is one of many ways to teach and that other methods also have value, they are often more willing to give it a try. Teachers develop a deeper understanding of the values inherent in the Project Approach.

Four Examples of the Project Approach in Courses and Workshops

The following descriptions provide four of many possible ways to teach the Project Approach to inservice and preservice teachers. In the first example, the Project Approach is learned in a conference retreat center over an intensive three- or four-day period. In the second example, the Project Approach is integrated into a college course that focuses on the implementation of a project with children by preservice students in classrooms. In the third example, the project is a primary feature of a university course that addresses a range of topics such as social development and mixed-age grouping. Finally, in the fourth example, projects are carried out within a university setting in a two-week workshop that focuses exclusively on project work.

The Project Approach Institute at Allerton Park Conference Center

For the last eight summers a three- or four-day institute specially designed for learning the Project Approach has been offered at the conference center of the University of Illinois at Allerton Park. The participants come from various parts of the world and throughout the United States. Following introductory lectures on the philosophy and principles of the Project Approach, the participants form small groups, identify a topic to investigate, and follow all three phases of project work, including the development of displays and documentation of the kind their own students might prepare.

Interspersed in the daily schedule are lectures on specific aspects of the Project Approach and lively discussions led by Lilian Katz and Sylvia Chard. Participants learn from each other and from the leaders. They leave Allerton invigorated and enthusiastic about project work. During the past several years, more than 500 people have participated in the Allerton institute. Further information on the Allerton institute, sponsored by the University of Illinois, is included in Section 5 of this Catalog.

College Coursework and Projects with Children

Many teacher educators have incorporated project work into existing early childhood or elementary education courses at the preservice as well as inservice levels. Introductory discussions and slide or video presentations are blended with readings and reflections. Preservice or practicing teachers enrolled in the class conduct a project with children in their own classrooms, and those who are not classroom teachers might assist with project work in a colleague's classroom. Those without access to a group of children would join together and do a project as adults. Time is allocated during course meetings for discussion of progress, clarification, technical questions, and support for each other's efforts. At the end of the course, participants bring samples of the children's documentation to the course meeting for discussion and display. In one class, students found it more convenient to prepare a portfolio of the project, or Project History Book, as described by Helm, Benecke, and Steinheimer (1998) as part of their final discussion and debriefing about their experiences with project work.

College Coursework and Projects with Adult Students

Another method is to prioritize course time during each class meeting for students to conduct a project as adults. Diane McClellan, Professor and Coordinator of the Early Childhood Education program at Governors State University in Illinois, incorporates project work into a three-credit, 5-week intensive course, "Integrating Curriculum in Early Childhood Education." Content includes: principles of early childhood education, social development, the impact of the physical environment on learning, mixed-age grouping, and the Project Approach. The following is a narrative of a course that took place at Governors State University and is an example of learning the Project Approach with university students preparing to teach prekindergarten through third grade in public schools. Although other trends and issues in early childhood education were also addressed, the main feature of the course was the implementation and documentation of a project. Consistent with recommendations by Katz and Chard (1989), students were advised to choose a project topic that was in close proximity to the university, the hub of their mutual environment.

The class consisted of 25 students. The students were ethnically and racially diverse and varied in age from 22 to 50 years old. Some were already teaching, others were working in classrooms as teacher assistants, and many others had not yet had teaching experience. For five weeks, the class met twice a week for five hours each day. Early in the trimester, students broke into groups of four to six students and began to discuss what they would like to research. Woods, a stream, several ponds, working farms, and wildlife surround

Governors State University. Most students chose projects about some aspect of nature. One group, however, decided that they would like to study one of the villages, Park Forest, Illinois, that is adjacent to the university. This decision came in part after an overview to the class by a regional expert, Larry McClellan. The project, entitled "Where Thistles Grew Before: The Park Forest Story," is presented below in three phases.

Phase 1. After much discussion, one of the groups chose to study Park Forest, Illinois. Their interest in Park Forest grew from its history as a racially integrated community, reflecting the racial diversity of the group members, and its unique role as a planned community built after World War II. Students began by discussing their prior knowledge about Park Forest. Because none of the six students lives in Park Forest, their knowledge of it was limited. They also discussed their general knowledge of the south suburban region of Chicago in which they all live. Next they created a topic web and a list of questions reflecting their own interests. They also decided to ask the local expert who had given an overview of the area surrounding the university to take them on a tour of Park Forest.

Phase 2: A tour of Park Forest. Using a university mini-van, the first activity of the group was a tour of Park Forest, a village of 24,000. The tour was extensive, and the students asked many prepared and impromptu questions. After the tour students created a revised web of their developing knowledge and areas of interest for further investigation. They also met with the Historical Society Archivist, Jane Nicoll, at the Park Forest Public Library.

Students were intrigued, challenged, and stimulated as their knowledge of the history of Park Forest grew. They decided to focus on the people of Park Forest and divided into three areas of interest: the very beginning of Park Forest in 1949, the first residents, and people living in Park Forest today. One of the quotes gathered in this process was by one of the community's developers, who wrote: "We aren't interested in houses alone. We are trying to create a better life for our people. We will have failed if all we do is produce houses." From the beginning, the village was conscious about welcoming people from diverse faiths and races.

Students studied the process undertaken by a planned community, including homes, shopping centers, schools, recreational facilities, and road systems. The deep involvement of the first residents and the level of their commitment to making the village work amazed the students. They discovered that Park Forest was seen as the prototype for communities of the future, and that many articles and books had been written about it. Finally, several members of the group interviewed three families currently living in Park Forest. These interviews were taped, and the families expressed great loyalty to Park Forest and gratitude for the open and generous spirit of the community.

Phase 3: Using technology in project development and documentation. The above activities and others were represented in a bar graph of population trends, pie charts representing other census data, a brief summary of the family interviews, brief descriptions

of key founding residents, pictures and graphics, a map, and a description of people living in the area before 1949, including Native Americans.

The three phases to this project were similar to those of other projects, with one exception. Documentation and a culminating event revolved around a Power Point presentation. A Power Point presentation is created with the aid of a computer, Power Point software, and a projector designed for use with Power Point. Students were initially more nervous about learning Power Point than about any other aspect of their projects.

The rationale in using Power Point as a tool includes the increasing importance of teacher proficiency in technology in and out of the classroom, the ease with which Power Point presentations can be stored and preserved as archival resources, and the realistic ease with which Power Point can be used with children in classrooms. In addition, Power Point presentations allow a group of people to view and discuss a project with a common focus in time.

Like word processing, Power Point is a program that can be learned by many children from second grade upward. Before this age, kindergarten and first-grade students are able to work with their teacher's lead, or the teacher can do this part on her own. Disadvantages of Power Point in the third phase of a project include its lack of ongoing visibility in a classroom of children over a period of time. Both approaches to documentation—Power Point and bulletin boards—provide students plenty of time to consult and work with one another as they assemble the final stages of the project.

In analyzing their preference for Power Point versus a bulletin board display of the culmination of the project, most university students expressed a preference for the Power Point presentation. In addition to its effectiveness as a presentation tool, students felt Power Point provided them with an opportunity to become more proficient in several valuable skills including Power Point itself, using a scanner, using a digital camera, and accessing topical information through the Internet. In addition, they were able to use and integrate videotape and audiotape into their Power Point presentations.

Although the project remained the major focus for each group, the added complexity created by the need to master technological skills appeared to enhance rather than distract from each group's project. Each group presented its final project to the entire class. In the near future it is expected that "Where Thistles Grew Before: The Park Forest Project" will become a part of the Park Forest Web site and the Governors State University Web site. In addition, it was presented for viewing at the annual conference of the National Association for the Education of Young Children held during November 1998 in Toronto, Canada.

Reflections of the instructor. Like the students, the first-time use of Power Point for project documentation and presentation felt risky and somewhat overwhelming. The biggest surprise was that it went relatively smoothly. Some students remarked that their initial reaction to the required use of Power Point and other technologies was to drop the course. However, after having experienced both the project work and developing greater technological skill, all

agreed that if they had to do it over again they would use Power Point, because they felt they had an opportunity to master the medium as well as the message.

As the Park Forest project progressed, I was struck by the enthusiasm the students demonstrated in studying local history. Many remarked that they had never guessed that history could be so interesting. Their respect and comfort level with one another grew into friendship, and multicultural insights were discussed within a meaningful context rather than as a separate subject.

The Project Approach in an Intensive Two-Week Course

Eileen Borgia developed and offered an intensive summer course for practicing elementary and early childhood teachers at Southern Illinois University, Edwardsville from 1995 through 1998. The three-credit graduate workshop met for ten days, five hours each day. An outline of the course follows.

Day One: An introductory day consisting of an orientation to project work through slides and video presentations, resource sharing, warm-up activities, and a review of course requirements, which includes a daily log with written reflections on experiences and assigned readings.

Day Two: The class is divided into small working groups. Several important skills are addressed separately: cooperative learning, observational drawing, and the process for selecting a topic.

For example, an exercise in observational drawing includes the following. When students arrive in class, plain paper and pencils are provided, and they are asked to draw something they saw outside on their way into the building. Usually they begin tentatively, and several students whisper that they do not know how to draw. The drawings are usually rough sketches, made with light pencil strokes. Next, students are asked to take more blank paper, pencils, and a clipboard and go outdoors and find the object they had just drawn. They then draw the same object, this time observing the object as they draw.

Students exit the room feeling somewhat skeptical but willing to partake of the adventure. They spread out around the immediate vicinity of the building and sketch. The group reconvenes outdoors and visits each student's drawing site, noticing the actual object and the student's rendition of it. During this time, each student describes the object they selected and why it was selected. As the discussion proceeds, they often remark on the power of drawing in helping them to see objects more clearly.

Upon returning to the classroom, students are asked to re-create their observational drawing in another media. Paints, clay, play-dough, crayons, markers, paper, found objects, and other supplies are on hand. After allowing time for the students to work on their re-creations, the three examples of their work are labeled and displayed on a bulletin board—Time 1: drawing from memory; Time 2: observational drawing; Time 3: refinement. Next,

students view the videotape "Jed Draws His Bicycle" (Forman, 1996) and discuss the importance of observational drawing in project work. This event has become a powerful influence on teachers' willingness to attempt observational drawing as a way of learning.

Day Three. A topic is negotiated and agreed upon by consensus in each group. Participants begin a topic web and share written reflections on their memories related to the topic. The instructor/facilitator makes initial contacts with potential experts and the hosts at site visits. A session in the university computer lab is scheduled, to introduce students to the Project Approach Home Page, the ERIC Clearinghouse Web site, and other useful Web sites about project work.

Days Four and Five. Students continue Phase 1 and enter Phase 2. Overlapping of phases occurs since the time to conduct the project is limited, and schedules to visit sites and interview experts must be flexible. Equipped with clipboards, paper, pencils, cameras, binoculars, magnifying glasses, insect repellent, sun screen, collecting jars, baggies, and snacks, they embark on investigations, exploring a site, interviewing experts or fellow students. Sites on campus and in the neighboring community are preferred. Throughout this time the dual roles of student learners and teachers-in-training are acknowledged. Participation becomes simultaneously a direct experience of the Project Approach and a simulation of project work with children.

Day Five. By the afternoon of the fifth day, Friday, student enthusiasm is usually high. The importance of nurturing the disposition to learn is well understood, and even though the work is interrupted by the weekend, participants continue their work on the project during the weekend.

Days Six and Seven. The importance of documentation is introduced through lecture, photos, slides, and discussion, and project work continues.

Day Eight. By the eighth day, the value of culmination and practical principles of display are reiterated. Students complete documentation, and depending upon the need for flexibility in completing tasks, plan the culmination for day nine or ten. Invitational flyers are distributed around campus, and experts and faculty teaching other courses are invited to bring their classes to the culmination. In their enthusiasm while planning, a compatible refreshment to serve to the guests is suggested, the aesthetically pleasing display is prepared, and communicating through documentation is emphasized.

Days Nine and Ten: Project Culmination. Students arrive dressed for guests, often bring special artifacts to enhance their display, and enthusiastically convey to a rotation of audiences what they have learned, not only about the topic, but about the pedagogy as well. For the instructor, culmination serves as authentic assessment. Little more is needed than to observe as the students explain their project, what they learned, and why. As they convey their project work to their colleagues, their high level of knowledge gained during the nine days is obvious. Our experience suggests that culmination is truly a celebration. On the last day, the final tasks include dismantling displays and choosing documents to keep. Borrowed

items are returned, and the groups debrief and discuss their experiences related to the process and documentation of their projects. Journals are finished, and an evaluation of the course and their own learning is completed.

Reflections of the Instructor. Eileen Borgia found this two-week intensive course to have special benefits in teaching the Project Approach. First, the Project Approach created unexpected collaborations among faculty. Instructors with classes meeting at the same time as the Project Approach course allotted time in their own class schedules for their students to attend the culmination. By the second year of teaching the course, attending culmination had become somewhat of a tradition for some courses. The instructor of "Introduction to Education," a first course for preservice education majors, included time in each section of her course to attend a culmination. A colleague who taught a curriculum course to graduate level inservice teachers used the Project Approach culmination to exemplify curriculum issues included in that course.

Second, the Project Approach course contributed to a feeling of rapport and visibility within the School of Education. Students visited many campus departments and offices during their investigations. Several people who had provided expertise attended the culmination and indicated that they were impressed with the students' work. Once, a group of students studied St. Louis Street, a stately avenue of Victorian homes in the Edwardsville community. The topic appealed to participants who taught upper elementary and high school classes because of its emphasis on history, architecture, and the community. The display of the St. Louis Street Project was transferred to the Edwardsville Public Library, where it remained for a month following the course.

Third, in two separate courses, students chose to investigate woodland trails near the university and asked Dr. Bob Williams, a professor of Science Education who had also been responsible for building the trails, to serve as an expert. Dr. Williams and his class of fifteen inservice science teachers served as experts for the Project Approach students. Thus, an unexpected form of peer teaching emerged.

An unexpected affirmation of the power of the Project Approach emerged as students who had taken the course during a former summer returned to see what the next group had done and to recall fondly their own class experiences with project work.

Conclusion

Learning to effectively facilitate children's learning through in-depth investigations is a challenge. A beginning step is to participate in simulations similar to the ones described in this article, and then thoughtfully reflect and consider ways to try project work with children. Although adult students are sometimes reluctant at first, they are reminded of what it is like to be a learner, and they usually leave with an enthusiastic reaction to using the Project Approach. They come to view the Project Approach and children's encounters with "real world" environments as a valuable addition to the tool kit needed for effective learning and

teaching. Finally, their professional development continues as they venture forth in their classrooms to implement the Project Approach with children.

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Section 2

Special Section on

The Project Approach in Alberta, Canada: Reflecting on Eight Years of Doing Projects

The Project Approach in Edmonton, Alberta

Sylvia C. Chard
University of Alberta, Canada

In a pre-kindergarten and kindergarten mixed-age class there are children investigating the backyard of the Child Study Centre at the Ring House site of the University of Alberta, Canada. They are comparing the outdoor space with their own backyards at home. Some children are looking closely at the tree bark, others are collecting small rocks, and a third group is watching the birds in the bushes nearby. On the other side of the campus there is another site occupied by the first- through third-graders at the Child Study Centre. At this site, there is considerable activity in the open space between two University buildings as the children put the finishing touches to a garden and small pond they are building. The children here have been working since the previous April to make their playground more interesting. These are children involved in active, engaging learning. This scene is typical for the Child Study Centre (CSC), a lab school at the University of Alberta. The children are engaged in project work.

The Project Approach has been developing in Edmonton, Alberta, in a number of early childhood education and day care settings since 1990. This development has been facilitated particularly by the work of teachers in the Child Study Centre of the University of Alberta and staff in the Department of Elementary Education. For the past few years there have been in-service courses at the University for teachers wishing to implement the Project Approach in their classrooms. The in-service education opportunities for local teachers and child care workers have coincided with some direct attempts to improve early education and raise standards of provision for young children in the Province of Alberta.

The Child Study Centre has a history of more than a quarter of a century of excellent practice in the field of early childhood education. Throughout the 1990s the Project Approach and ideas from Reggio Emilia have been influencing practice in the CSC in a number of ways. The growth of the Centre from a preschool and kindergarten to an educational program for children ages 3–8 has contributed to its visibility in the community. The program for children in grades 1 through 3 is administered as an alternative program for the Edmonton Public School Board. The productive partnership between the University and the school board has facilitated the development of rich project work and has encouraged local teachers to come and see children's work in progress.

Teachers in local schools who have taken the Project Approach course offered each term at the University have been successful in adapting the ideas for their own classrooms. As project work became established in a few schools and preschools in the Edmonton area,

so too has the quality of work done by teachers in the course. Within the course they have been able to learn first-hand from other teachers' presentations about the benefits of this way of working with children. The project work in Edmonton has also contributed to the quality of the projects featured on the Project Approach Web site:

http://www.ualberta.ca/~schard/projects.htm

Last year *The Hundred Languages of Children* exhibit of Reggio Emilia came to Calgary, Alberta, and many teachers traveled from Edmonton to see it. In the CSC and in many classrooms the Project Approach and the ideas from Reggio Emilia are helping teachers in a mutually supportive combination. Teachers report that they have been able to implement practices which have helped to interest children in school work and, for many children, to raise the standards of their work in the classroom.

The CSC also offers opportunities for research to graduate students in Early Childhood Education at the University of Alberta. In this catalog we feature the work of four University of Alberta Master's in Education students who have studied project work in relation to other issues for teachers in the field. The two theses and two papers were on assessment and evaluation, the engagement of children's minds, language learning, and the research process. Three of these were carried out through participant observation at the CSC. The fourth was undertaken by a teacher who observed and assisted the teacher in a local third-grade classroom where project work was already in progress.

The Project Approach Web site was designed at the University of Alberta and will, by the summer of 1999, be further developed as a resource site to support online courses on the Project Approach. An annual institute for Korean kindergarten teachers coming to study the Project Approach has been appreciated and will continue to be offered at the University. Through conference presentations, workshops, and visitors to the CSC we enjoy a rich exchange of experiences with other teachers from Canada and elsewhere. In the years ahead we hope to continue helping teachers and child care workers to develop project work that is increasingly responsive to their needs and interests.

1. Darlene Williams. (1998). *Documenting Children's Learning: Assessment and Evaluation in the Project Approach.* Unpublished Master's Thesis.

Abstract
Assessment and evaluation of students' work have always seemed overwhelming responsibilities for teachers. Models of education which advocate a didactic style of teaching have typically relied on standardized, criterion-referenced and paper-and-pencil tests to assess and evaluate student achievement. Given the move toward more student-centered classrooms, which emphasize process as well as product, alternative assessment and evaluation methods are needed. One student-centered way of teaching is the Project Approach. While involved in project work, children have an opportunity to engage in purposeful and relevant activities to further their understanding of the topic of study. The purpose of this study was to examine how assessment and evaluation could be carried out within the context of a third-grade project on "Building." The study examined suitable tools and techniques for assessment and evaluation. These involved discussion by the teacher and the children together, helping both to engage in a collaborative process as they discussed standards of work. Features of project work also studied were those which were particularly helpful to the teacher in assessing children's progress in ways not possible through systematic instruction—for example, the assessment of children's personal interest in different aspects of the work, children's particular expertise and how it can be applied to facilitate all children's learning, and the willingness of children to solve problems and rise to challenges in the context of a study of importance to the whole class group.

2. Lorraine Leskiw. (1998). *A Study of the Engagement of Children's Minds in the Project Approach.* Unpublished Master's Thesis.

Abstract
This study investigated the engagement of children's minds in a project on the "Playground." The participant-observer role allowed for a close relationship with the children and gave the researcher considerable understanding about the development of the project as a whole. The researcher observed the children at work and talked with them about what they had done and about their ideas for the work they still wanted to do. When interviewed, the children were able to talk about the various factors which contributed to their sense of engagement with the project work. Various aspects of motivation, involvement, self-direction, and satisfaction with work were studied and discussed in relation to selected research literature on motivation. The children were able to articulate the nature of their enjoyment of project work. They mentioned the sense of responsibility they felt when they were asked to contribute to the learning of other children with their own study. They talked about the culture of the classroom in terms of the values of helping others, respecting alternative views, and being responsible for completing work. They gave the impression that in contrast

with systematic instruction, they found project work offered them a greater sense of their own competence and potential as learners.

3. Fern Reirson. (1998). *The Research Process through the Project Approach.* Unpublished Master's Paper.

Abstract

The Project Approach can provide teachers and teacher-librarians with an approach to teaching children the Research Process through an in-depth study of a topic. The Project Approach by Katz & Chard (1989) and the Research Process (*Focus on Research,* Alberta Education, 1990) provide frameworks for inquiry-based learning that overlap and complement one another. Educators hold important roles in supporting learners throughout the Research Process and the Project Approach. A project on "Paper" provided an authentic example of how the Project Approach and Research Process align themselves. There were many areas of overlapping interest for both project teacher and teacher-librarian, each coming to the Paper Project from their respective traditions and perspectives. The study showed how the Project Approach can provide teacher-librarians with another approach to inquiry- or research-based learning. The teacher-librarian valued the work of uncovering what the children knew about paper and their experiences with it. As she listened to the children, she was able to respond more knowledgeably to their interests. On the other hand, the project teacher gained experience in teaching the research skills involved in using literary sources of information and finding a variety of ways to help children develop their interest in information retrieval.

Frameworks for Inquiry-Based Learning

Project Approach	**Research Process**
Phase 1	Planning
Phase 2	Information Retrieval Information Processing
Phase 3	Information Sharing
Assessment	Evaluation

4. Sharman Armfield. (1998). *Early Literacy and the Project Approach.* Unpublished Master's Project.

Abstract

This study examined the opportunities afforded through the Project Approach for young children's language learning in a pre-kindergarten and kindergarten mixed-age class. Speaking, listening, reading, and writing were all documented and discussed, especially in relation to the real world contexts offered by a project. The author discussed ways in which the classroom environment supported the children as they talked, read, drew, and wrote. The value of children drawing in conjunction with their writing was also discussed. The topics of study were: hospitals, the airport, light, birds, bicycles, trees, and rocks. There were many different opportunities for language use in the context of project work. The children

discussed their experience, their investigations, and their findings. They undertook functional writing of letters, requests, reports, and explanations. In addition, they used expressive language as they wrote stories and poems to record the more memorable aspects of the project work. The quantity and variety of language experience was found to be very beneficial to the children involved in this project.

The Tree Project

A Project by Preschool and Kindergarten Students
at the Child Study Centre, University of Alberta, Edmonton, Alberta, Canada
Length of project: 8 weeks Teachers: Sharman Armfield, Nancy Thomas, Lee Makovichuk, Diane Mellott

Phase One

Beginning the Project

The project "Trees" began when many of the children showed an interest in the brightly colored leaves that signaled the beginning of autumn. In Phase One the main objective was to pool the information, ideas, and experiences of the children. We listened carefully to the children's stories and experiences, and we made a web from a list of words we brainstormed together. The children began by drawing pictures of the trees in their own backyards and dictating stories about them. The children made other representations of trees with paint, plastercine, and clay. During this phase we also made a list of questions that children were asking and used these questions as a guide in our exploration of trees.

Phase Two

Developing the Project

During Phase Two the teachers introduced new information and encouraged children to use their skills of observation and communication through drawing, writing, dramatic play, painting, and constructing. We began our exploration of trees by making several field visits to the various trees on the University of Alberta campus. On our visits we collected branches, leaves, bark, berries, and nuts. Together we made observational drawings of the trees and their leaves, made bark rubbings, measured the circumference of the trunks, and estimated the height of the trees. Back in the kindergarten classroom we read books about trees and their seeds. We cut open the butternuts and mountain ash berries and cracked open the chestnuts. We shook the pine cones to find the pine seeds. Then we planted the seeds, noting that a seed needs soil, water, and sunlight to grow, as well as a dormant season. We placed the planted seeds in the backyard.

We also became interested in the tropical trees that grow indoors in our climate. There was an indoor fig tree in the classroom, and we decided to visit the greenhouse at the Department of Agriculture building to look at other tropical trees, particularly those that give us food. The children touched the trunks, branches, and leaves and made observational drawings of many of the trees. We saw many trees including coffee, cocoa, banana, and palm trees. In the classroom the children brought fruits and nuts from home. They estimated how many seeds the fruit contained and made representations of the fruit. The children also conducted several experiments on trees and looked at osmosis and starch and sugar storage in trees. Next the children investigated all the things that are made from trees. Each of them collected items made from wood or paper and shared them with the rest of the class.

Phase Three

Concluding the Project

The third phase of the Tree Project celebrated the learning that had taken place and brought the project to completion. We invited the families of the children to celebrate with us and had an open house. The children wrote the invitations and then illustrated them. At the open house the children showed their parents their drawings, stories, and experiments. The children also created a Ring House Newspaper that told the story of the Tree Project.

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Comments	The project on trees was thoroughly documented as part of a Master's study. It was examined particularly to investigate the relationship between the Project Approach and the development of early literacy. Other projects included in the study were on the hospital, the airport, birds, bicycles, light, and rocks.

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The Paper Project

A Project by First- and Second-Grade Students
at the Child Study Centre, University of Alberta, Edmonton, Alberta, Canada
Length of project: 8 weeks Teachers: Fern Reirson, Julie Gellner, Tera Woollard, Shanthu Manoharan, Stephanie Kelly

Phase One

Beginning the Project

"Paper" was selected as a project topic following a study of "Color" because it was a resource which children used repeatedly and daily. A teacher introduced the project by reading *The Paper Crane*. In small groups, children webbed and presented what they knew about paper to the entire class. A teacher recorded the children's questions as they arose during the discussion. The children were asked to represent what they knew about paper in a way other than webbing. Provided with a list of other possible forms of representation, the children built paper and wooden models, used art materials, wrote stories and poems, and drew diagrams to communicate what they knew about paper. When the teachers examined the children's webs and oral questions, the following questions arose repeatedly or created the most interest: How is paper made? Where was paper invented? How many ways can we use and create with paper? What do we do with paper once we are finished with it?

Phase Two

Developing the Project

One group of children experimented with trying to make paper from sawdust. Over time, others created handmade paper from construction paper, powdered paint, sawdust, fabric, cooked vegetables, paper toweling, and newspapers. Those interested in the history of paper researched and explored the origins of writing surfaces and their uses: hieroglyphics on papyrus, Greek on clay tablets, and Chinese brush writing. Another group made creations out of paper: assorted puzzles, different paper airplane designs, and paper bridges. A parent shared her collection of handmade paper. The children interviewed an entomologist about paper wasp nests. A small group walked through the university and to the riverbank, examining bridges, benches, and walkway supports in designing and building paper bridges and buildings. Other children typed stories and built block and paper models of how paper is milled, used, and recycled.

Phase Three

Concluding the Project

Parents were invited to tour the children's culmination representations on an informal basis. The children shared their learning informally with one another during the last day of the project. Some children made books about paper, containing diagrams, handmade paper samples, poems, and instructions for making paper. Another group made a timeline in a display case of paper's history. Others created puzzles and games about paper and using paper. A center was set up for testing the strength of different paper shapes. A giant collage of an airport, containing mini plane models, accompanied a free verse poem entitled "Flight." Tours were conducted of a three-dimensional block city explaining how paper is made, used, and recycled. Following the final day, children added examples and descriptions of the project work to their personal portfolio books.

Comments

The Paper Project was thoroughly documented and examined to identify the co-relation between the Project Approach and the Research Process (*Focus on Research*, 1990, Alberta Education) as part of my Master's study (1998). The study showed how the Project Approach can provide teachers with an alternative and authentic model for inquiry- or research-based learning. Projects are another means of addressing the curriculum through interdisciplinary topics. Primary and secondary resources are often integral and interrelated to project work. The Project Approach provides children with the opportunity to develop their thinking skills and independence during the inquiry process.

FLYING HIGH AND LOW

Flying high and low
Take off fast and land slow
Going down,
Curving sideways
Going up, looping, gliding
To the ground
Soaring in the sky
Engines roaring
Climbing into the clouds
Planes plunge
Helicopters hovering
Above the land
Over a small countryside
Ears popping
Babies crying
Bumpy rides
STOP in a slide!

Poem composed by children making aerial collage of airport and paper airplanes.

TEST THESE SHAPES

1. Choose a paper shape
2. Put a book on the shape
3. How many books can it hold?
4. Draw a picture of your experiment
5. Write a sentence about your test results

Try testing each of these shapes. Which shape is the strongest?

Circle

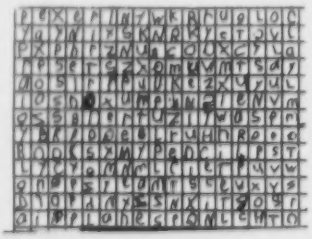
Square

Triangle

Diamond

'Testing Paper' Centre designed by children who had tested and built bridges using different weights of paper and different support shapes.

Observational drawing of handmade paper using vegetables and fabric, using a magnifying glass.



'Paper' word search puzzle designed by interviewing classmates, observing displays and examining word search puzzles in magazines.

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The Playground Project

A Project by First- and Second-Grade Students
at the Child Study Centre, University of Alberta, Edmonton, Alberta, Canada
Length of project: 12 weeks Teachers: Lorraine Leskiw, Shanthu Manoharan, Julie Gellner, Fern Reirson, Stephanie Kelly, Tera Woollard

Phase One

Beginning the Project

Development of the new site for children in grades 1-3 at the Child Study Center resulted in the use of a small landscaped area outside the University of Alberta Education Building cafeteria. It was not designed for children to spend their recess there. One of the parents, Kim Sanderson, who worked for the local Parks and Recreation Department as a playground designer, offered to help improve the outdoor space for the Centre. The children shared stories of playgrounds, of happy memories and some of occasional injuries. Children brought in photographs of playgrounds they knew and some of their backyard play spaces. They constructed models of playgrounds out of blocks and clay.

Phase Two

Developing the Project

The children went on several field visits. They visited one child's backyard with a playhouse, balance beam, compost, garden, pond, and pond animals. They visited a school playground. Kim visited to show slides of playgrounds in Scandinavia. The children formed groups to research the possibilities for their school playground. They investigated birds and bird baths, butterfly gardens, compost and worms, bees and wasps, squirrels and snowshoe hare, equipment for games and an inventory of what they already had. The children presented their findings, representing their knowledge with overhead transparencies, posters, 3-D models, role play, and graphs. Discussion led to small groups designing a garden, garden bench, a book about games, bird houses, the frame of a playhouse, a barrel pond, and a concrete bird bath. Some equipment was purchased, and the children made posters on how to use the equipment. The school year ended when the work on the playground was still in progress. The new school year began with this work being continued and much work going into the production of items for the playground. A $500 grant was obtained for the project. The children formed new groups and continued with the work. Garden benches and an arbor were constructed. The first-grade children who had not been part of the work before the summer vacation were introduced to the project and invited to make contributions.

Phase Three

Concluding the Project

The history of the project was reviewed and elaborated by a group of children who undertook to collect some of the "before" and "after" photos, make diagrams comparing the playground then and now, and write captions for the photos and mount them in a book on the project. Once the work on the playground was nearing completion, the children and their teachers arranged for parents to come and celebrate the children's work before the long white winter made the playground into a very different place.

Comments	The project presented some interesting challenges for the teachers as it continued for an unusually long period and work was suspended over the summer vacation. At the beginning of the new year the children needed more time than the teachers had expected to gain the momentum of interest and energy to continue with the project to a satisfactory conclusion. In the end, however, the Playground Project provided some wonderful opportunities for the children, with the aid of experts, to make a number of interesting adaptations to the environment they enjoy at recess.

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The Building Project

A Project by Third-Grade Students
at an Elementary School in Edmonton, Alberta, Canada
Length of project: 12 weeks Teachers: Darlene Williams, Carmelle Workun

Phase One

Beginning the Project

The topic of "Building" integrated a number of curriculum goals. It was also a topic that the children had prior knowledge of and were interested in studying. There were also resources and local experts to be called on. The teachers began the project by telling the children simple stories about recent home renovations they had both done to their houses. Children then shared stories about their homes and their experiences with building. After sharing stories, the class brainstormed a list of possible activities from which to choose to give them another opportunity to share and represent their experiences with building. The children drew and labeled houses, surveyed classmates about the types of houses they live in, and constructed models of buildings. Throughout this phase children's questions about building were collected on a chart which was displayed in the room. These questions were used to focus the research of our project: How does electricity get into the house? How do you build a basement? Why are some roofs flat and some sloped? How do you know if a building is safe once it is built? What materials do they use to build a sky scraper? How did they build the pyramids in Egypt? Do all houses look the same around the world?

Phase Two

Developing the Project

There were several guests who visited the classroom to help the children with their research. Among them were a roofer, a carpenter, a tool safety expert, an old-fashioned tool worker, a surveyor, and a bridge builder. The class also made weekly visits to a house construction site. They visited a pioneer village and went on a tour of the neighborhood. The children engaged in a variety of investigation and representation activities. Some wrote research reports on famous buildings. One group wrote a play based on a talk-show format, explaining the various steps involved in building a house. Some presented their information in a multi-media format. One group made a booklet on tools and tool safety. Children also made observational drawings of buildings and building materials, a poster on old-fashioned tools, a comic strip about pioneers building a homestead, a book report on different houses around the world, and a Venn diagram comparing building materials in hot and cold places. Many discussions and sharing sessions took place where the children had opportunities to appreciate and comment on one another's work and to contribute new understanding and knowledge to the group. Children's work was displayed throughout the classroom, on school bulletin boards and in the school display case at the entrance to the school. Questions generated in Phase One were reviewed regularly and children able to respond to a particular question shared their new-found knowledge and insights with the class.

Phase Three

Concluding the Project

The children decided to have a photo slide show for their parents to highlight key features of the project. Each child chose two slides and wrote up their narrative, focusing on describing what was happening in the slide and what learning took place from the experience. Each child also selected work from his or her project folder for parents to see. The class then spent a wonderful afternoon with parents presenting the story of our project in a slide show, sharing their project portfolios with their parents, and taking their parents around to the various bulletin boards and display cases showing them their work and the work of their classmates. As a final culminating activity, a group of fathers organized a bird house building activity. Each child had the opportunity to design and build his or her own bird house. In order to remember our project, the class put together a memory album consisting of photos taken during the project and anecdotal stories written by the children.

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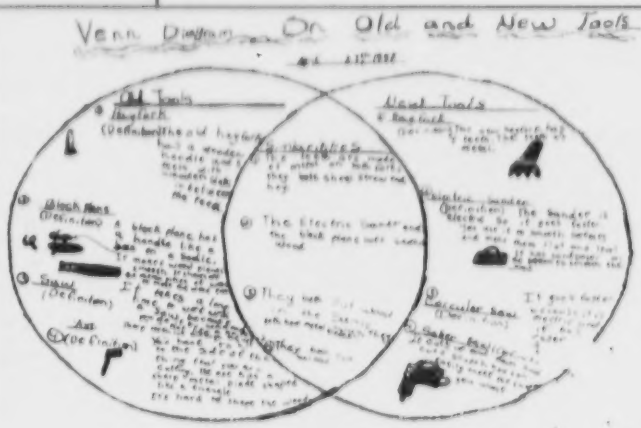
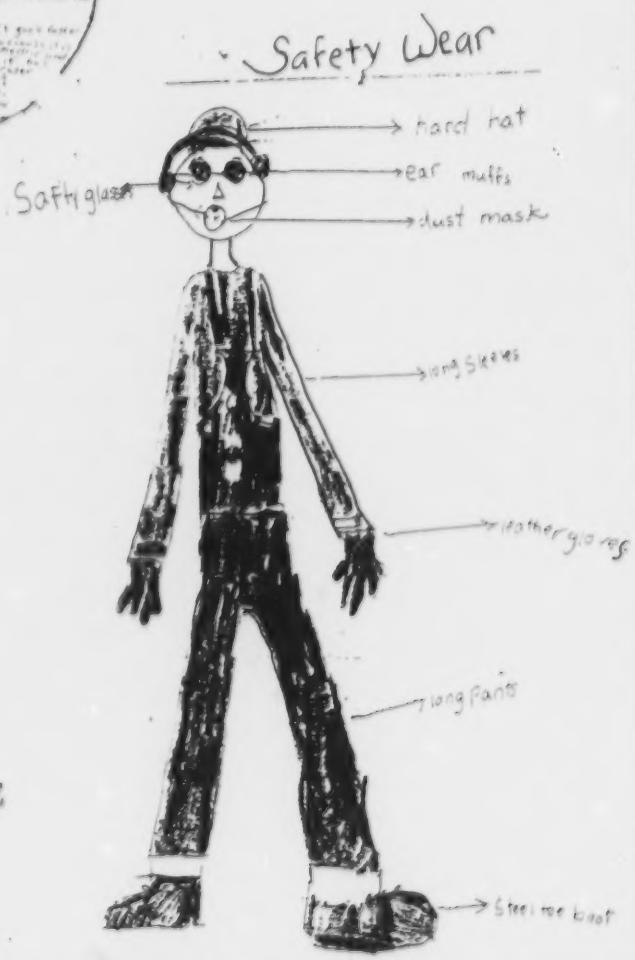
Comments

This project on "Building" was the focus of a Master's thesis study focusing on assessment and evaluation in project work. Believing that traditional assessment and evaluation methods are inadequate to capture the amount and diversity of learning taking place during project work, we wanted to experiment with a wider variety of assessment and evaluation tools and techniques in order to best document children's learning. Some of the assessment and evaluation tools used during the project included: learning logs, field notes, quality work charts, project work planning sheets, self-assessment and evaluation criteria for Phase Two activities, peer evaluation strategies, a project study sheet, portfolio and project self-evaluation sheets, and anecdotal notes. The most significant insights gained from this study of assessment and evaluation in project work concerned the necessity to involve children in the assessment and evaluation process from the very beginning of the project. Children were helped by knowing up front the expectations concerning their work and behavior, and they needed to be a part of the process which determined these expectations.





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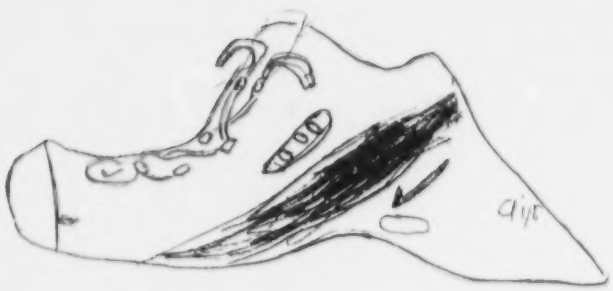
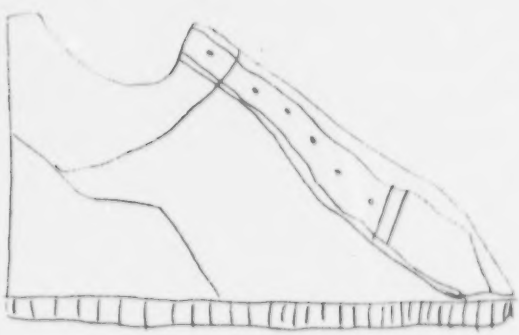
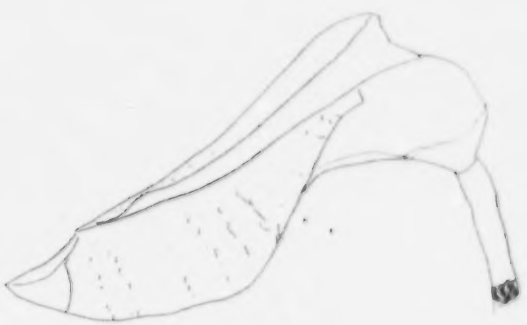
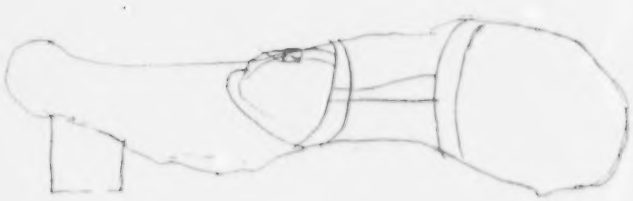
Section 3

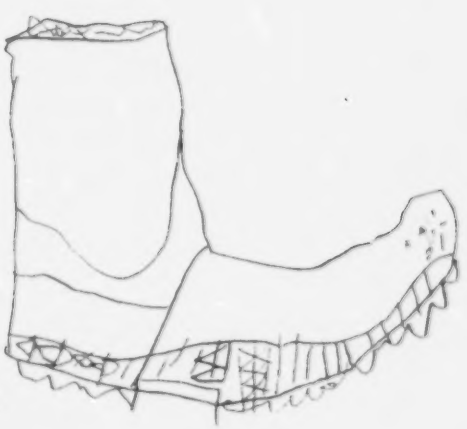
Project Summaries from Around the World











Experiencing Documentation

Judy Harris Helm
Brimfield, Illinois

The Turtle Project
Teacher: Linda Lundberg
Harlem School District, Machesney Park, Illinois

Display is an efficient and effective way to share documentation of children's work in projects. However, few teachers have been trained in how to make effective displays or how to mount children's work for appreciation and reflection by others. In writing *Windows on Learning: Documenting Young Children's Work*, extensive time was spent investigating the art of display. The Turtle Project's exhibit, "Experiencing Documentation," shows the difference between a traditional bulletin board approach to sharing learning experiences and the documentation displays designed to encourage understanding of the complexity of the project and the learning which resulted from the experience.

The kindergarten project "Turtles" is shared through a traditional bulletin board format and then through documentation panels. The children's work and photographs used in the two approaches are similar in both methods of display. As the observer views the traditional bulletin board, the following questions can be asked:

- What does this tell me about how students are learning?
- What does this tell me about what students have learned?
- How does this documentation help the teacher guide this learning experience?
- What impressions do I have regarding the teacher's knowledge, skills, and effectiveness as a teacher when I view the bulletin board?
- How might members of the community respond to this display if it were in a bank or mall?

The observer then moves on to the documentation panels and again asks and answers the same questions.

Some of the features of documentation panels that make them more meaningful than the traditional bulletin board are described here.

Webbing

Webbing before the learning experience, during the experience, and after the experience documents growth in concepts and understanding of the relationship between concepts. It

also documents vocabulary growth. In the Turtle Project, webs document the growth in understanding of the parts of the turtle, how to care for a turtle, and how turtles differ.

Time One, Time Two Representations

Drawings become more detailed as students learn more about the objects they are studying. Other forms of representation are paintings, constructions such as block structures, play environments, songs, or dictated stories. Older students' representations include drawings, essays, plays, books, or constructed models. In the Turtle Project, there are Time One and Time Two drawings of turtles. The teacher has pointed out the additional details in the second drawings.

Narratives of a Learning Experience

Step-by-step explanations of what happened in a learning experience show what students thought, what they tried, and what happened. In the Turtle Project, a narrative explains how the children's observation of changes in George's behavior led them to try a number of ways to "help George out." In the end they learned that George was going into hibernation.

Window on a Child's Development

This method shares one child's experiences and how that child developed new knowledge or skills, or how that child's disposition or attitudes toward learning changed through the project experience. A child's growth from fear and reluctance toward George, the turtle, to enjoyment and caring is documented.

Lists of Concepts or Words

Lists of words and concepts that the children have learned are added to as the project progresses. In the Turtle Project, an ongoing list of vocabulary words was displayed in the classroom and then became part of the documentation.

Explanation of Relevance of Project for Curriculum and Assessment System

Knowledge, skills, and dispositions which are part of a curriculum and which are monitored by an assessment system are displayed. In this display, a portion of the checklist that was relevant to the Turtle Project has individual items highlighted if they were achieved through the project experience.

Teacher Self-Reflection

Teachers' thoughts about teaching strategies, discoveries about effectiveness of various experiences within the project, and ways that individual differences were accommodated are highlighted in a Teacher Reflection Bubble. Consistent use of the bubble shape enables parents and other viewers to immediately recognize teachers' thoughts. In the Turtle Project,

the teacher shares here thoughts about when and how to provide resources to the children about hibernation.

References

Helm, J., Beneke, S., & Steinheimer, K. (1998). *Teacher materials for documenting young children's work.* New York: Teachers College Press.

Helm, J., Beneke, S., & Steinheimer, K. (1998). *Windows on learning: Documenting young children's work.* New York: Teachers College Press.

The "All about Potatoes" Project
by Three- to Five-Year-Old Children
at Bing Nursery School, Stanford University, Stanford, California
Length of project: 6 weeks Teachers: Jane Farish, Mark Mabry

Phase One

Beginning the Project

Because the chant, "One potato, two potato," fascinated children and kept popping up spontaneously, we brought a bag of potatoes to school. Children's interest and enthusiasm in handling, sorting, and counting these potatoes led to this project. As a "provocation" we set out baskets of different varieties of potatoes. We webbed possibilities and brainstormed questions to generate discussions with children about their firsthand experiences eating, growing, and cooking potatoes. Gathering this information in small group conversations, we recorded children's ideas and formulated questions. We anticipated the project would build on previous gardening and cooking experiences to encourage the development of new skills and knowledge, and would provide opportunities for rich dramatic play and parent involvement.

Phase Two

Developing the Project

"Are potatoes the same color inside and out?"
Interest in the names of different varieties was the driving force in dissecting potatoes. The investigation expanded to weighing. Data were recorded.
"Do all kinds of potato taste the same?"
For two weeks children tested predictions and hypotheses, selecting potatoes to cook. Some were scrubbed and baked, some cooked and mashed. All were tasted and compared at snack time. An outcome was mashed potatoes mixing red, purple, and gold potatoes. Preferences were charted.
"What can you make with potatoes?"
Answers came from people and books. Visiting experts, including parents, made potato dishes with children and answered questions. Children spontaneously made potato soup in the play kitchen and announced a restaurant. They wrote a menu of "potato items." Energy built as this play continued, involving more children. We investigated soup recipes and made potato and tomato soup.
"How do potatoes grow?"
Two children knew that potatoes grew underground and took the initiative in planting seed potatoes and old potatoes that were sprouting. A group took ownership of daily watering.

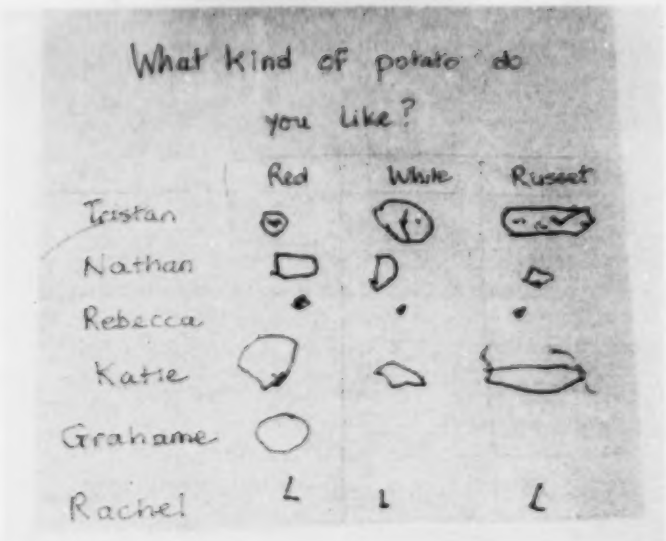
Children represented new knowledge through drawings, paintings, collage, poetry, chants echoing "One potato, two potato," and stories inspired by repeated readings and discussions of storybooks about potatoes and root vegetables (e.g., *The Turnip*).

Phase Three

Concluding the Project

"Let's make baked potatoes again." Revisiting this earlier experience made a logical conclusion to the investigation. Children took charge of cooking for the week, applying their knowledge scrubbing potatoes, wrapping them, and timing the baking in toaster ovens in the classroom. Teachers suggested gathering accumulated work and information. Over several days a group collaborated with a teacher in using the computer, school copier, and staplers to make recipe books to take home. In June, there was a further "culminating event" when children harvested and cooked the potatoes they had grown. Deep interest in cooking and gardening developed. Children developed and applied planning skills; gained skills in weighing, counting, classifying, and comparing; and created a wealth of stories, rhymes, and chants.

Comments	This project brought to mind Lilian Katz's statement: "A good project unpacks familiar things and deepens our appreciation of them." The interest and enthusiasm for this project was compelling. It was a very satisfying investigation because it integrated all curricula areas and was inclusive, appealing to boys and girls and mixed ages. We were especially pleased by the way in which this concept of exploring an everyday object connected school with children's home life. Parents reported their children's interest in potatoes at home and on trips to the store, and it fostered parent interest and involvement in the classroom.



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The Ball Project

A Project by Three-, Four-, and Five-Year-Old Children at Hillsboro Pre-Kindergarten Program, Coffeen, Illinois

Length of Project: 8 weeks Teacher: Debbie Noyes

Phase One

Beginning the Project

Balls are very familiar items to preschool children and make a good topic. As a few children began to use balls in the classroom, several misconceptions were noted by the adults in the room. A discussion on whether or not all balls bounce was overheard by the teacher and initiated an investigation of balls. The study of balls was very appropriate because all the children in the class, which included not only a mixed-age group but also children with special needs, had some experience with balls. The children were encouraged to bring a ball from home for the investigation.

Phase Two

Developing the Project

Whole class, small group, and individual investigations began as a result of questions or misconceptions the children had about balls. The children experimented and attempted to solve problems using many different kinds of balls. Resources for this project were very easy to find because all homes and schools have some kind of ball that could be part of our investigation. We collected quite a variety of balls, and the children investigated questions like:

Do all balls bounce?
What is inside a ball?
Will balls float in water?
Which ball rolls fastest?
How can we make a ramp for balls to roll down?
What kind of tracks will different balls make if rolled in paint?

A 4-year-old boy undertook one the most interesting investigations. His question was: Will a playdough ball bounce? His problem-solving skills were amazing to us. The children represented their learning through observational drawings, paintings, conversation, and dictated stories.

Phase Three

Concluding the Project

As a culminating activity the children dictated the story of our Ball Project to match photographs taken during the project. The stories and photographs became a class book about our project. They also helped the teachers design a display board that was put in the main hallway of the school. The children enjoyed sharing their work with parents, teachers, and other children in the school. This project enabled the children to ask questions, make predictions, and test their ideas.

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Comments

It was interesting to see how such a simple and common topic developed into a project in which the children used their problem-solving skills efficiently and effectively. This project was also a good example of how project work can be done without taking a "trip" to do field work. It also reinforced the fact that project work can take place with a group of children with a variety of abilities, and that all children can benefit on their own level.

The Car Project

A Project by Three-, Four-, and Five-Year-Old Children at Illinois Valley Community College, Oglesby, Illinois

Length of project: 16 weeks Teachers: Sallee Beneke, Rebecca Tonelli, and Practicum Students

Phase One	*Beginning the Project* We began in mid-January by investigating a nearby automotive lab. The topic was selected for its potential to engage 4-year-old Taylor, who liked cars, in project work. Our investigation began with a discussion and web about problems that can develop with cars. Discussion resulting from a first visit to the lab revealed the children's interest in the individual cars in the lab. Small groups sketched in the lab on many occasions and observed repairs and oil changes. Wheels, license plates, and motors were frequently the focus of attention. Children used tools to disassemble many car parts.
Phase Two	*Developing the Project* By late February the children had decided to build their own car. A motor constructed spontaneously by Taylor sparked this idea. He suggested to the group that they should build a car for his motor, and they liked his idea. They began a list of parts for the car that they would need to construct. The list grew over time. Children volunteered for teams to build different parts and made additional trips to the lab for in-depth observation of the parts they planned to construct. The children continued to interview the automotive instructors. They graphed car colors to decide the final color of the car. Drawings were used to plan constructions. Construction of the car parts from found objects and classroom art materials provided many opportunities to practice measuring and writing skills. Children learned to respect each other's additions to the overall construction and building efforts. Constructions included seats, battery, jumper cables, windshield, dashboard, movable steering wheel, handles, gas tank, cell phone, air gun, bumper, license plate, wheels with tread, antenna, doors, brake and gas pedals, and a horse trailer. Dramatic play in the car continued throughout the project. Taylor's enactment of welding led to the addition of a real welding mask to the dramatic play area.
Phase Three	*Concluding the Project* The project came to a close by the end of April. As a culminating event, the children's car was transported to the lobby of the main campus for display. It was roped off as if it were a museum piece. Small groups of children came to the main campus each day for a week to provide tours of their car to those who passed through this busy place. A documentation panel showed how the car project developed. The children showed great interest in discussing this panel among themselves.

Comments	We had predicted that the children would be interested in the auto lab machinery, such as the lifts that raise and lower the cars. The children surprised us with their interest in cars. This reminded us that as adults we take many complex things in our everyday environment for granted. In fact, at first the children were not able to sketch an entire car. Their initial field sketches portrayed parts of cars. Encouraging the children to touch and discuss the features of the car part they were sketching had a dramatic effect on the quality of their drawing.

The Vet Project

A Project by Three-, Four-, and Five-Year-Old Children
at Bright Beginnings, Woodford County Special Education Association, Eureka, Illinois
***Length of Project:** 8 weeks* ***Teachers:** Pam Scranton, Brenda Wiles*

Phase One

Beginning the Project

The Vet Project began when one of the children, during morning group time, cried because he had to leave his kitty at the vet's to be neutered. After talking through the experience as a group, the rest of the children couldn't let go of the subject and continued to talk about David's kitty the rest of the morning. The next day we talked about the possibility of going to a vet clinic, and the children began asking questions and predicting what we would see. Kati shouted, "You better start writing, Teacher!" We started making a list of what they knew about a vet clinic. I discovered that they had a limited "vet vocabulary." We decided to go to the library to choose some research materials.

Phase Two

Developing the Project

After the trip to the library, the children began reading the vet books and had some discussions about what kinds of animals we would see at the vet's. Some of the children thought that we would see monkeys, zebras, cows, and pigs. We made our beginning web and prepared interview questions for the vet. On the actual field experience, the children were divided into two groups. Those children most interested and involved in the project were responsible for graphing certain aspects of the clinic, recording answers to their questions, and sketching parts of the clinic. The expert, Dr. Marge, took the children through a typical exam and the children manipulated lots of the vet tools. After we returned to the classroom, the children began to make plans to construct their own vet clinic. They used their field sketches and photographs taken on the field experience to construct, using boxes and the various scrounge items that parents brought into the classroom. The small group of children building the clinic was very concerned with making the clinic look as close to the one they had visited as possible, and they had to problem solve through the construction of key pieces of the clinic. This same group also visited the high school art class where the art students encouraged them to model with clay and represent the animals they saw at the vet clinic.

Phase Three

Concluding the Project

As the month of May approached, the dramatic play that had been so intense a few weeks earlier began to wane. I gathered the project group together, and they decided to take down the vet clinic. We made another web and found that they knew a lot more "vet words" now and could tell anyone the important parts in a vet clinic and why they were needed. We made a list of their ideas about sharing their learning with their parents and the ECE class next door. The group decided to make a book. They then made a list of important things they wanted included in the book. They collected the displayed drawings and graphs from the walls for processing into the vet book.

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Comments	This project mushroomed so quickly that it surprised me! The community of Eureka became so involved in the vet project, and it was so exciting to watch it happen! The clinic itself was very accommodating to the project group's needs that day; the art students at the high school did a wonderful job supporting the children as they attempted clay for the first time; some education majors at Eureka College spent time helping the children record their vet experiences in journals; and our parents were wonderful with all their donations for the construction of the vet clinic and giving of their time in the classroom as the children investigated.

The "Building a Tree House" Project

A Project by Three- to Six-Year-Old Children
at Illinois State University Child Care Center, Normal, Illinois
Length of Project: 16 weeks Teachers: Barb Gallick, Lisa Lee, Scott Brouette

Phase One

Beginning the Project

The project on building a tree house began when the staff made arrangements to have a tree house built in our play yard in a dead elm tree. The children were aware of the upcoming building project because they had assisted in removing bark from the dead tree to prepare for the building phase. The children drew pictures of what they thought a tree house would look like. Questions for investigation were generated from morning meeting discussions that were tape recorded and transcribed for documentation purposes. These questions focused on the characteristics of a tree house and the building process. The teachers hoped the children would experience close observation of a building project.

Phase Two

Developing the Project

We began activities focusing on the tree and designing a tree house. Some children drew on a projected image of the tree in our yard. Many children created models out of clay and "junk" materials in the art area. These models were painted, labeled, redesigned, and became story subjects. The woodworking bench with tools and wood was available regularly. Sketches of the dead elm tree and of a child-made tree house in the neighborhood were made. The children conducted surveys and measured and graphed various types of information related to the tree and the tree house. The children helped illustrate a poem about the tree house and made it into a book. They used tape and blocks to create a representation in our classroom of the actual size of the tree house floor. The carpenters visited our classroom to show their tools and materials, and the children dictated questions they wanted to ask the carpenters. Throughout the building process the children watched and asked questions of the carpenters. The teachers took pictures each day, documenting the various steps involved. At morning meeting each day, we wrote a summary of what had been done the previous day. Parents were involved by reading daily updates and by receiving tours of the building site.

Phase Three

Concluding the Project

For the children, the main culminating event was being able to actually use the tree house for play. The children decided to make two books telling the story of how our tree house was made. In creating the books, we used children's drawings, the photographs of the actual building process, and the narratives written by the children each day of the building process. The child care center hosted an open house to provide parents and the community an opportunity to view our newly renovated play space. This project provided the children with concrete knowledge about the building process, experience in conducting a focused investigation over an extended period of time, and opportunities to represent their learning in a variety of ways.

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Comments	We were amazed at how long the children remained interested in investigating this topic. The success of this project emphasizes the importance of choosing a topic that is related to the children's experiences and environment. We began the project assuming the children would have prior knowledge related to the topic. Due to the difference in our expectations and the actual stage of the children's development, we learned to focus our own listening skills and our guidance of learning. By the end of the project, the children's knowledge of this topic had grown tremendously. The teachers felt more comfortable in their understanding of the Project Approach and in their role as co-investigators with the children.

The Hospital Project

A Project by Kindergarten Students
at Cherry Tree Elementary School, Carmel, Indiana
Length of project: 8 weeks Teacher: Candy Ganzel

Phase One

Beginning the Project

In response to visiting the hospital nursery for our Baby Study and from interest generated from my recent surgery, the children were very inquisitive about the hospital. From this interest, we decided to study the hospital and many of its associated functions. Because many of the children's parents worked in medical-related fields, I knew that we had a large resource pool of experts. There is also a hospital nearby, and the children had a lot of experience with hospitals, ranging from being a patient in the hospital to visiting people in the hospital. Our many discussions about their experiences enabled us to web the hospital topic. Using the web, the children decided what parts of the hospital they wanted to study and thus divided themselves into small groups. The groups were: Emergency Room, Admitting and Waiting, Lab, Doctors and Nurses, Nursery, Body, Accidents, and Patient Rooms.

Phase Two

Developing the Project

The children worked in their small groups to form questions. Some of the groups went to the hospital for their field work and many of the children had experts visit them. We had a microbiologist and doctors and nurses from many specialties that met with the children in small groups. All of these experts were children's parents. After talking to the experts, two of the groups changed their focus. The Emergency Room group decided to study accidents. One of the Body groups decided to study more about organ transplants. Once the groups were more focused, they started to represent what they had learned. The children represented their information by constructing a skeleton made from paper, a model of a nursery, a poster of accidents and how to prevent them, a book about the lab, an informational poster of the lab, puppets and a puppet show demonstrating the circulation of blood, a skit about the emergency room, three-dimensional puppets of the body, and a life-sized cut-out of the body with the body parts. Much of what the children learned extended into their writing and their dramatic play.

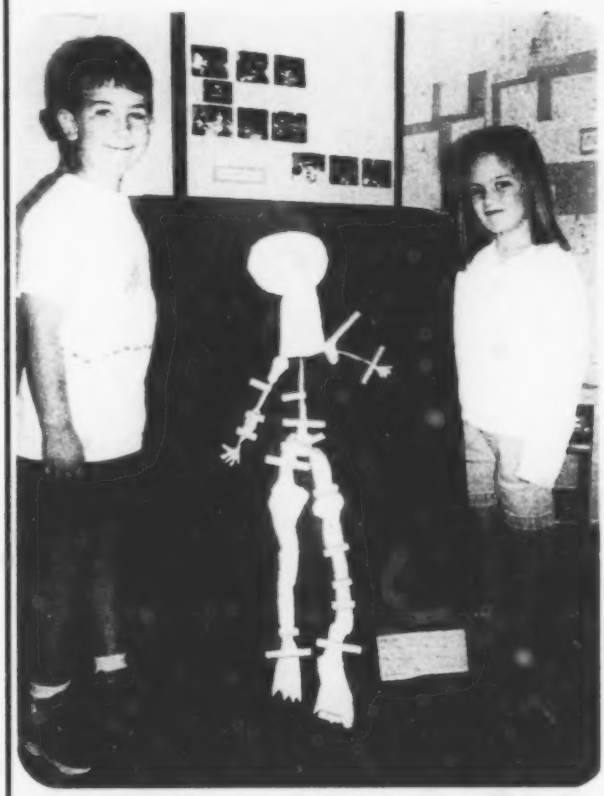
Phase Three

Concluding the Project

The children first presented to all of the other children in the class what they had learned and what they made. We then decided to invite parents and other significant adults to see our projects. The children showed the guests their part of the project and explained what they had learned, and were also responsible for explaining the other parts of the Hospital Project to the adults. The children designed a tour brochure to help the guests know what questions to ask, what to see, and what should be explained.

This project expanded their ability to speak publicly, listen, and write. Some of the skills learned during this project were: critical thinking, responsibility, fine motor, cooperation, researching, gathering data, sorting information, and many, many more.

Comments	I have been using the Project Approach in my classroom for four years and I thought this was one of the best projects I have done thus far. I felt the interest level of the children was high and remained high during the whole project. I received positive feedback from the parents. The children not only showed an interest at school for the hospital, but they also took much of the information home to discuss. Two children in the x-ray group particularly impressed me. They became very interested in the skeleton. They used a book about skeletons to make a skeleton on a poster board. They cut all of the pieces free-hand and labeled them. The time and patience they put into this representation was extraordinary. Another positive element in this project was the number of parents from our classroom who were able to be really involved with the project as experts. It was nice to have so much parental support. I felt the children really benefited from the Hospital Project and would consider hospitals as a possible project topic again.



The Shoe Project

A Project by Kindergarten Students
at Hong Kong International School, Hong Kong
***Length of project:** 3 weeks **Teachers:** Mary Jane Elliott, Carol Young*

Phase One

Beginning the Project

Prior to the Shoe Project, the class participated in two other projects that were theme-related, with the topic selected by the teacher. For this particular project the children were asked to select the topic. Suggestions ranged from "mountain lions" to "Barbie dolls." Developing a screen for topic selection with young children was difficult! Numerous conversations ensued before the class, encouraged by the teacher, decided to investigate shoes. Many children had just purchased new shoes and were exchanging stories about how they bought them, so they were quite interested in this topic. Each child brought three pairs of shoes to school that included everything from size 14 man's basketball shoes to 4-inch platforms! The children brainstormed questions for the investigation.

Phase Two

Developing the Project

Several parents enrolled in a Project Approach workshop prior to working on the Shoe Project. With their assistance, five children could select a question to investigate and have an adult facilitate their work and document their learning. Highlights of the project included: (1) transforming a shoe into a planter; (2) testing various shoes to identify which were waterproof and recording the findings on a chart; (3) making shoes, using a shoe tree as a form and applying paper mache, drying it in the oven, and then decorating; (4) taking a basketball shoe apart and identifying the pieces; and (5) putting battery-powered lighting and a small cooling fan into a "shoe house."

A parent who worked for Nike heard about the project and furnished the class with shoe parts from the factory and answered questions. He also supplied posters and pamphlets that allowed the children to find answers to questions they had. My son Michael, a college engineering major, assisted the team that was interested in electricity. They learned about wiring, alligator clips, and switches! Throughout Phase Two the children studied real shoes and sketched them. Many designed high-fashion shoes that would amaze even Salvatore Ferragamo!

Phase Three

Concluding the Project

The children documented their own learning about shoes. With adult supervision a team of children laminated digital photos and used the safety-edge paper cutter for trimming. The photos were sorted and captions were written using invented spelling. A child designed the project title on the computer. The items were then stapled onto a long bulletin board that hung at eye level. At conference time each child took the parents on a journey of the Shoe Project. Other kindergarten classes also visited the display. Prototypes of shoes designed by the children were sent to Nike. The Chief Executive Officer was so impressed with the models that he had the prototypes shipped to Beaverton, Oregon to be displayed at the headquarters. What an honor for the children!

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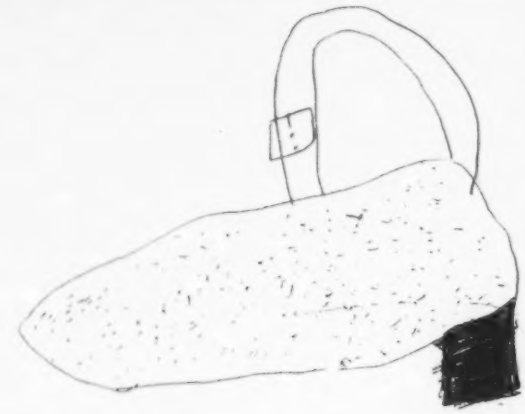
Comments	This project demonstrated the strengthening of *dispositions* for learning. A group of children was determined to take a shoe apart and spent three days on this task until they were successful. A high degree of creativity and cooperation was evident as children designed and created a variety of shoes. Deep *feelings* were also noted. Feelings of compassion and remorse were displayed as children heard about Chinese children who had their feet broken and were forced to wear tiny shoes. Feelings of being successful and competent were apparent as children raised questions and conducted their own investigations. A heartfelt note of thanks to my son at the conclusion of the project was a powerful witness to the deep personal impact project work can have on a child.



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The Water Project

A Project by Second-Grade Students
at Grafton Elementary School, Grafton, Illinois
Length of project: 8 weeks Teacher: Dot Schuler

Phase One

Beginning the Project

Children from Grafton School, on the Illinois River, began their project with a class web. Personal stories were recorded and placed in a listening center with a continuous-roll "movie" box of illustrations. Questions for investigation included: How does dirty water get clean? What can I learn about water pollution? What is the color of water? What happens to food when it is placed in water? How does water work? What can I learn about sharks, manatees, dolphins, sea horses, and whales? Children said they also wanted to learn about all of the pools at Raging Rivers (the local water park), and about river otters, turtles, birds, and fish.

Phase Two

Developing the Project

Field Sites included: the local water park, Grafton Water Works, Locks and Dam system on the Mississippi River, and a local creek and pond. Our Environmental Educator and a park ranger visited our classroom. Several children studied ocean creatures, displaying models in an "aquarium" made from boxes. Books, posters, graphs, and diagrams represented their learning. Others studied river wildlife. Models were hung in the "river" behind a plastic see-through mural. Children typed and printed out information about the wildlife. Samantha put "pollution" in the river and created a poster describing the pollution. One group interviewed teachers about uses of water and constructed a model of the school building for displaying their information. Bethany studied the effect of water on foods; results were charted. Katie investigated the color of water; a book and bar graph represented her learning. Kate made models of the local water park attractions; posters described her models. Another group built a model of the Water Works building with a filter for cleaning the water. Many children published poetry, songs, idioms, and comic strips; numerous poems were displayed on an animated computer "movie." Group meetings were used for sharing progress on investigations and representations, with children offering encouragement, comments, and suggestions.

Phase Three

Concluding the Project

The morning of culmination, we walked through our river community collecting litter. That evening, after hearing songs written by the children, parents and community members viewed our display. The printed guide, books, bar graphs, and a Venn diagram provided information on the river exhibit. The Water Works exhibit displayed a flow chart explaining how water is cleaned and a diagram showing the layers of the filter. Water actually flowed from the filter to the "school building," where signs explained how water works in each classroom. At another exhibit, guests viewed charts and posters explaining various experiments. Models and informational signs about Raging Rivers Water Park attractions were on display. Our aquarium contained models of ocean life and was accompanied by books, posters, diagrams, and a pictograph.

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Comments	After the culminating event, we watched videotaped segments of our project, reflecting on our work. Throughout the project, application of curricular skills abounded, whether occurring naturally during small-group investigations, or taught systematically for assignments completed at learning centers. Persuasive essays were written and displayed in the hall. Often, spelling words were selected from our project. In the reading center, several charts about water were made using new curricular skills: suffixes, fact-and-fiction, and cause-and-effect. Two class books about water were written and compiled using alliteration and descriptive essays. Three class math books were made incorporating two-step story problems, number words, and fractions, all of which were related to water.

For her investigation, Bethany decided to put different foods in water and observe the results. She wrote about her idea in her daily journal: *I can't wait until we start our project and it will be fun to do my experiment. I wonder if my experiment does not work.*

She read the journal entry to the class and we had a discussion:

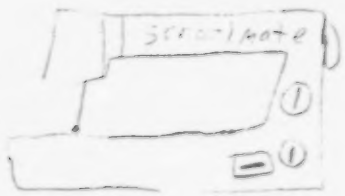
Probably do another experiment. Valerie
I think you could do another experiment, but maybe retry it. Phil
I thought maybe you could make another one and while you're making another one, you could work on the one that you think won't work out. Kylie
You could just do something else about what you're studying. Kyle
If the first time it didn't work and you want to try it again, add more ingredients. Matt
I think she could do that project over but before that one, try a different one, but then do that one over. Carley
Maybe you could get a friend and maybe they'll tell you if you did something wrong. Kate
Instead of water use a different liquid. Maddie
You can just not do an experiment. Think of another project to do. Heather
If you have two experiments and you keep messing up on the first one, then do the other one. Katie
I think you could maybe not retry but try thinking and when you think of something you might have done wrong, then do what you thought of. Phil
If it didn't work the first time, if she had a piece of paper she could go over it on a piece of paper to see if she did everything right. Carley
See if it has enough ingredients. Stephanie
Work on another question. Valerie
Try another idea and if that doesn't work, go back to the other one. Kylie
First, use a whole carrot, then just try a little piece. Maddie

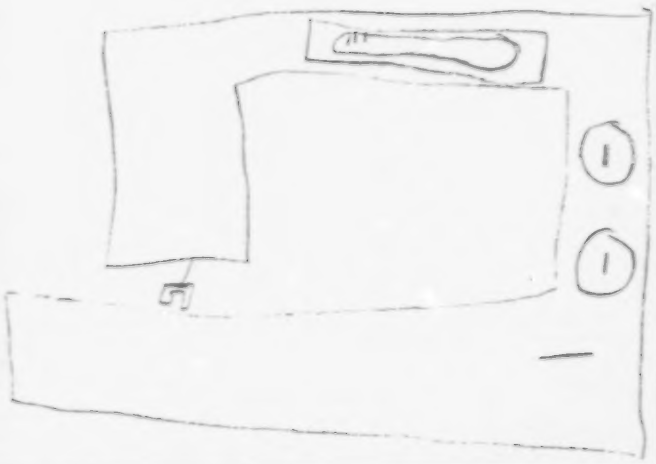
The "Blankets for Babies" Project

A Project by Second- and Third-Grade Students
at Marquette School, Machesney Park, Illinois
***Length of Project:** 6-8 weeks **Teachers:** Pat Bainter, Julie Fogarty*

Phase One	*Beginning the Project* We became involved with a community program called Learn and Serve. The Learn and Serve program is a way of incorporating our curriculum with service to the community. Our students' interest in babies led us to making quilts for newborns. Our goals for the students were to learn the process of quilt-making and to begin to understand the value of contributing to community needs. Another goal was for the students to realize that citizenship comes with responsibilities. The project was a collaborative effort of second- and third-grade students.
Phase Two	*Developing the Project* The project began with a visit from a newborn and a story. Field visits included our junior high home economics class, where students worked with junior high students to sew quilts. We also visited a new mother's room and the nursery at a local hospital. There was extensive community involvement through students going out into the community and members of the community coming into the school. Experts included new mothers, master quilters, woodworkers, and hospital personnel. Children represented their learning through drawings, fabric cutting, journal entries, reflection questions, sewing, book making, and toy making.
Phase Three	*Concluding the Project* Our culminating event was presenting the finished quilts, books, and toys to the hospital personnel. It was a formal presentation with students, parents, teachers, hospital personnel, and representatives of the media. The students learned the process of making quilts, toys, and books. They developed decision-making skills and time management skills. They learned the value of giving to their community without expecting something in return. It was a joy to see the pleasure the students received when they saw pictures of newborn babies and their families receiving their gifts.

Comments	This was our first project. Our most valuable insight was the importance of the pre-visit. We were able to stay within the structure of our time frame; however, we had to cut our original project idea in half. The drawback to this project was that the students were unable to actually present or see their gifts being given to newborns and their families. The children were only able to see this step in photographs. Overall, we enjoyed the project and felt it was valuable.





Section 4

The Project Approach and the Internet

Internet Resources for Project Work

Dianne Rothenberg
ERIC Clearinghouse on Elementary and Early Childhood Education
University of Illinois at Urbana-Champaign

The ERIC Clearinghouse on Elementary and Early Childhood Education (ERIC/EECE) frequently hears from teachers who want to know how to get started in doing a project, who are looking for suggestions for project topics, or who are looking for more classroom resources, such as reference books for students or for themselves as they move through the phases of a project. Some of the most important resources we suggest to these teachers are accessible via the Internet.

This article highlights how the Internet can be used as a tool to communicate about the Project Approach (through email and listservs), as a source of information on the Project Approach itself, and as a source of reference or additional topical information for implementing the Project Approach.

Online Communication: Help and Guidance in Doing Project Work

Access to the online world can reduce the isolation of a teacher who might be the only one in her school using the Project Approach, or who is trying out the Project Approach for the first time. One reason that Internet access is helpful to those new to the Project Approach is that the most important kind of Internet resource available for project work is other knowledgeable educators, including teachers and experts experienced in the Project Approach who can be contacted via the Internet. Many of these individuals belong to listservs, or Internet discussion groups related to the Project Approach. Although many listservs may occasionally include discussions of project work, the following listserv is devoted entirely to discussion of projects in the classroom:

PROJECTS-L@postoffice.cso.uiuc.edu

For more information on PROJECTS-L, see the flyer in this section of the Catalog for details.

Teachers use listservs in the following ways:

- to ask a question;
- to seek help in finding resources;
- to elicit the help of colleagues in brainstorming about a problem encountered during the implementation of a project;
- to discuss ideas for displaying and documenting children's work; or
- to share with colleagues the outcomes of a completed project.

Belonging to a listserv can expand a teacher's network of peers beyond his or her geographic limitations to an international community of learners who are interested in, and may be knowledgeable about, either the Project Approach or the topic at hand. Listservs can provide a comfortable context for asking questions about project work and discussing concerns about children's progress.

Web Sites on the Project Approach

Web sites that focus on implementation of the Project Approach are another kind of resource for teachers undertaking project work. The number of Web sites that offer information on implementing projects of various kinds is increasing; but it's not always easy to find Web sites that offer information on the Project Approach as implemented in early childhood classrooms. Project-based learning (PBL), for example, is an instructional strategy that is generally used in upper elementary and secondary classrooms. PBL has been defined as "student learning by working on complex, open-ended, realistic (or real world) projects. Doing scientific research, composing music, writing an interpretive essay, and diagnosing a case are all examples of project-based learning"
(citation: http://www.learner.org/edtech/rscheval/flashlight/challenge2.html; October 2, 1998)

While project-based learning is similar in some respects to the Project Approach as described by Katz and Chard (1989), project-based learning usually differs significantly in the types of topics judged as appropriate for first-hand, close investigation and observation. To learn more about project-based learning and explore its characteristics, you may want to visit this site:

The Power of Project-Based Learning
http://www.glef.org/universal/learnlive/book/students/learning/thode.html

Another problem in locating Web sites on the Project Approach is that both Project Approach and project-based learning are terms commonly used in business and industry. A search on AltaVista, one of the most comprehensive "search engines" available on the Internet (at http://altavista.digital.com/) on "project based learning" (2923 "hits") and on the "project approach" (3797 "hits") may yield some useful sites, but most of the Web sites or parts of Web sites retrieved are not useful for early childhood educators.

One of the most productive ways of locating useful sites on the Project Approach, therefore, is by depending on the links from an authoritative Web site to high-quality, already evaluated sites. Authoritative Web sites are those sites produced by an organization or individual who has expertise in a particular area and who provides high-quality information on that topic. Many authoritative Web sites also provide selective links to other high-quality sites in the same topical area. ERIC/EECE performs this function in early childhood education and maintains several high-quality links on its Web site to appropriate

Project Approach Web sites or parts of sites (this section of the ERIC/EECE Web site is located at http://ericeece.org/project.html). Links to the following sites are available:

The Project Approach Home Page
http://www.ualberta.ca/~schard/projects.htm

This site offers the most extensive collection of information on project work in early childhood and elementary school settings. In addition to explanations of project work, 15 projects conducted by educators around the world are described in detail.

Expanded Documentation: Strategies for Communicating How and What Children Learn, by Judy Harris Helm, Ed.D.
http://rebusinc.com/ws_ed.html

This short article highlights documentation strategies for teachers.

The Project Approach at Carl Cozier School
http://wwwcoz.bham.wednet.edu/projecta/projappr.htm

The teachers at Carl Cozier School have been working with the Project Approach for five years. This Web page summarizes their use of the Project Approach.

Enhancing Classroom Information Resources

Children's observations of how adults find and use facts and nonfiction information can provide good examples of the importance adults place on literacy. The need for information in context, such as in the course of the investigation in a project, offers teachers a chance to increase a child's interest in text and in the development of reading by modeling use of encyclopedias, other reference books, and the Internet to solve real problems.

In most preschool and elementary school classrooms, children are encouraged to use books, encyclopedias, and other reference works to find information about the objects they are studying. All too often, however, classrooms, school library media centers, and nearby libraries may need to augment on-site collections with additional recently published, high-quality topical information. The teacher can use the Internet to find information available on topics that are likely to be investigated in her class using search facilities on the Internet such as AltaVista (http://altavista.digital.com/) or Inference (http://infind.inference.com/) and might begin this process after a concept web has been produced.

Some Internet sites contains basic reference tools, such as up-to-date encyclopedias, that may not be available in every children's center, preschool, or elementary school classroom. The following sites offer access to dictionaries and encyclopedias and other basic reference sources:

Internet Public Library
http://www.ipl.org/ref/RR/static/ref0000.html

Encyclopedia.Com
http://www.encyclopedia.com/

Australian A to Z Animal Archive
http://www.aaa.com.au/A_Z/Home.html

Encyberpedia: The Living Encylopedia
http://www.encyberpedia.com/eindex.htm

In addition to general works, the Internet can provide access to some specialized and useful collections of information for projects. For example, students engaged in a project at a nearby pond may need supporting information to help them classify the frogs in the pond or identify their sounds (try the Froggy Page at http://frog.simplenet.com/froggy/index.shtml). Students observing and graphing lunchroom eating habits can find ideas for analyzing lunchroom leftovers at the PEERS Recycle Exploration Unit Web site at http://www.eosc.osshe.edu/peers/peumodels/recycle3.html. Using search engines to find similar information for other kinds of projects can offer teachers a chance to model appropriate Internet use for finding information.

Conclusion

The Internet can support project work, especially for children in the elementary grades, although some resources can also be useful to younger children. The process of using Internet-based information sources can help teachers model the use of information. The growth of the Internet since the first Project Approach Catalog (1996) was published suggests that its usefulness to those of us interested in the Project Approach will continue to increase.

PROJECTS-L

PROJECTS-L is a Listserv discussion list for anybody interested in the use of the Project Approach in early childhood, elementary, and middle level education. For the purposes of this discussion list, the Project Approach is defined as "an in-depth study of a topic undertaken by a class, a group, or an individual child." Typically, the Project Approach refers to children's collaborative studies of "real world" topics that offer opportunities for observation and measurement of actual phenomena. The PROJECTS-L discussion list is co-owned by Sylvia Chard of the University of Alberta and Dianne Rothenberg of the ERIC Clearinghouse on Elementary and Early Childhood Education. For more information on the Project Approach, visit Sylvia Chard's Project Approach home page at:

http://www.ualberta.ca/~schard/projects.htm

For more information on ERIC/EECE, visit the clearinghouse's World Wide Web site at:

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To subscribe to PROJECTS-L, all you need to do is send a one-line email message that reads:

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For more information about the PROJECTS-L list, please contact:

Dianne Rothenberg
Associate Director, ERIC/EECE
University of Illinois
51 Gerty Drive
Champaign, IL 61820-7469
Phone: (800) 583-4135; (217) 333-1386
Fax: (217) 333-3767
Email: rothenbe@uiuc.edu

Sylvia Chard
Associate Professor of Education
Department of Elementary Education
551 Education Building South
University of Alberta
Edmonton, Alberta, Canada T6G 2G5
Phone: (403) 492-0549
Email: sylvia.chard@ualberta.ca

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The Projects Web Site
http://www.ualberta.ca/~schard/projects.htm

Sylvia C. Chard
University of Alberta, Canada

The Projects Web site **http://www.ualberta.ca/~schard/projects.htm** is designed to show successful project work. It provides teachers with a way to share a variety of projects carried out in preschool through middle level settings. On the Projects Web site we feature teachers' accounts of projects carried out in their classrooms. Graphics show topic webs, pictures of children actively engaged in projects, and samples of children's work.

A basic summary framework can be used to describe many different projects. On the Projects Web site each story is introduced through a summary based on the framework outlined in the book *Engaging Children's Minds: The Project Approach*, by Lilian G. Katz and Sylvia C. Chard (Ablex, 1989). On the Web site the reader is able to read a summary and then use hypertext links to pursue particular details, or to see how the teacher resolved certain dilemmas or contributed to the discussion of particular issues.

On the Projects Web site a reader is able to find the summary of a project he or she is interested in, learn more details about the parts of the project which are of most interest, locate a discussion of the structural features of a project, and read a discussion of particular issues affecting teachers using the Project Approach.

A sample project. In one section of the Web site there is a summary of the Cafeteria Project developed by the Child Study Centre of the University of Alberta Faculty of Education. The teachers and children studied the cafeteria in the Education Building. The summary provides an example of a project which has structural features which would be common to many other projects. Yet it also has some quite distinctive features.

Sharing ideas. Many teachers have expressed interest in learning what other teachers have experienced as they have learned to work this way with the children in their classrooms. By means of the Web site, readers can access a large amount of detailed information about projects. Through the hypertext links, readers can easily locate what they are most interested in and what is most personally relevant to them.

An invitation. This Web site is added to regularly as more stories are submitted for inclusion. Like all good World Wide Web sites, this site is always "under construction." This enhances its value and ensures that it remains responsive to teachers' current concerns. Instructions are provided on the Web site for sending material to the editor. By sending in accounts of their own teaching, site visitors can become contributing members of an extensive network of teachers with similar interests and concerns.

On Getting Started

Pam Oken-Wright
Mon, 27 Oct 1997 21:32:45 -0500

I've been trying to pay particular attention to the beginnings, when children first encounter a project-based classroom. This year I have 14 just-fives (almost half turned five since school started) in my class. . . and enough with particularly high energy and volume to "shrink" the room, if you know what I mean. Apparently none had engaged in group conversation to construct theory or solve problems or plan projects before. In the beginning the children did not hear each other. . . nor me, for that matter. When I asked questions like, "How do you suppose it works?" I got blank stares.

Now, not quite two months into the school year, we are in the middle (?) of a project about trees. . . all begun in the studio, where one child wanted to make a tree out of clay. She drew a plan for her tree. It looked like a lollipop with spikes coming out of the round part. As we discussed her plan, she decided that her drawing would not help her know how to make a tree of clay (at this point she already knew that a ball of clay could not be supported standing by a coil of clay). I invited her to go outside to study a tree and see if she could figure out how she might make this tree. Nine of her classmates decided to go with her. For nearly an hour these 9 children sat with clipboards in front of one interesting tree and drew study after study (they seemed somehow delighted with the idea that, when you study something to sketch it, you don't erase false starts. There are no "mess ups." Instead, you put attempt one aside and begin attempt two, and so on). What resulted was a wonderful set of sketches. Within each child's set there is a sequence that shows the child, her classmates, the teachers, the parents, and visitors exactly what the child was working on and how she came to satisfy her goal.

On another day we came together to look at the sketches together. I asked the children if they'd like to do something more with what they'd learned from doing the drawings. They said they wanted to make a BIG tree, as big as I am (which is big only relatively!). What ensued was much discussion about what this tree might be made of: clay? Couldn't be enough clay to do the job. Paper? It wouldn't stand up. We visited the supply center in the studio, and the children decided paper towel tubes would be good. . . but too skinny. They wrestled with that for awhile. It looked as if discouragement were looming, so I suggested they might find something to COVER the tubes with to make them fatter. They chose newspaper, which stayed crumpled up on the tubes for a second but fell off. They turned to scotch tape to cover the newspaper, and I redirected to masking tape, in the interest not only

of success but also of our tape supply. They then taped on "branches" of paper towel tubes. However, the tree would not stand.

I have noticed that, unlike later in the year, children in the beginning seem used to giving up when faced with a large problem. They do not yet trust that they will be loaned whatever they need to execute their ideas. When discouragement loomed, I simply said, "I wonder. . . if this were a real tree. . ." One child said, "The trunk stands real trees up." Another: "This tree has a trunk and it doesn't work." We are not where we will be eventually in this process of thinking problems through. There is more of me in our collaboration now than there will be 2 months from now. I suggested finally that we take a project walk and see if we could find out what holds trees up. Not only did we find roots at the base of trunks, but also roots that ranged out over yards beyond the tree itself. Most of the children had no idea that what stuck out of the ground all that distance from a tree actually belonged to the tree. Upon our return to the studio, the children added long cardboard tubes to the trunk to be roots. They painted the tree.

Periodically we had status conversations: How is our tree coming? What do we need to do next? which I tape recorded, transcribed, and studied to think about my role in all this. In one of these conversations the children argued about the length and angles of the branches. They decided to add longer cardboard tube branches. They have begun to talk to each other and not always to me. In another conversation, the children decided it was time to add leaves. I thought, based on what interested them during earlier discussion, that they'd want to wrestle with the decision about what season to make the tree. . . green for summer, orange, red, or brown for autumn, even "convertible" for a changing tree. Instead, they were interested in what leaves REALLY look like. And so, I took 5 interested children out to study leaves. This has initiated much observation and discussion about veins (in leaves as well as in their wrists), about angles of lines, about shape and size of leaves. . . and then it circled back around the trees as a whole, because in the middle of this leaf study one child who had, through her earlier study, seen only one trunk on a tree, noticed that the Magnolia tree in front of us had more than one. In fact, ALL the Magnolia trees in the vicinity had more than one trunk!

Meanwhile, the first "tree representer" made her clay tree. It stands probably a foot tall, and is probably 8 inches in diameter. It has twisty branches, rough bark, a hole for animals, and, at the end of each branch, one exquisite leaf. Other children have made clay trees. We've had countless paintings of trees (the watercolors are my favorite). . . and not a lollipop tree in the bunch. Some have such wonderful movement in them. One child includes a tree somewhere in every picture she draws. The children became interested in apple trees. One went to an orchard and brought back 6 apples "for an apple pie." One apple went to the class rabbit for a snack. We had a conversation to plan this apple pie, and most of the conversation was a construction of an idea about how many apples an apple pie needs. Today we made the apple pie. Children have reported about trees cut down in neighborhoods and have brought in huge hunks of bark, mimosa seed pods, and other gifts from trees. They are awake to trees now, and awake to their own possibilities and abilities in a new way as well. I'll continue to

listen, record, think, and then return to the children with new provocations or intriguing materials. . . until they move on. . .

Sylvia C. Chard
Sun, 25 Jan 1998 02:30:34 -0700

It is my experience too that expectations about the kinds of investigations that projects involve are important. They help children to anticipate the satisfaction of finding out the answers to their own questions. The children look forward to interviewing experts and engaging them in discussion in the classroom or at a field site. In anticipation they enjoy planning the interview around their questions. However, I have found setting expectations to be quite a problem for some teachers who are doing their first project. The children may have no previous experience of a project, and the teacher also has to experience the evolution of the extended in-depth study process of the project for him or herself in order to be effective in setting up the expectations. It may only be in the second or third project that this anticipation can be achieved. Indeed, it can require quite a shift in the culture of the classroom in which rich project work is undertaken.

To illustrate the point, here are examples of discoveries made by a kindergarten teacher doing her first project. She describes her discovery of the power of discussion in her class. She did her first project last term on the topic of "food" and found the whole idea of children generating questions and then researching them an enormous challenge to her customary way of teaching. She built on her usual ways of working with children, e.g. an art and craft center for children to do printing in. She wrote: "Prints of fruits and vegetables were done in the art centers usually using the children's suggestions of 'What do you think oranges would look like?' to which I replied, 'How do you think we could find out?'. The most important thing I learned was to stop answering questions and let the children discover the answer themselves. Believe me, this was a hard habit to break. The most amazing thing is they had transcended covering mere art curriculum or doing simple craft experiences. They had questions that could be and were answered by themselves. Another amazing thing were the conversations they had with each other while they were working. There was an incredible amount of depth and knowledge in these conversations: to learn to do more listening versus talking—that was the challenge for me." Elsewhere this teacher reported: "I had arranged for a chef to come into class and he started the dialogue with the children by sending in a note and asking them to decide what they would like him to help them prepare. The children's discussion skills were becoming very good at this point, so they immediately wanted to 'discuss it' (their words).

Something I truly would not have believed if I hadn't witnessed it is the ability of children to hold a real discussion. Their discussions have evolved from all of them calling out at the same time to each respecting each other's right to speak. Only occasionally now do children raise their hands; usually it is the quieter ones and it is only then I have to involve myself in running the discussion. "I usually offer instead quiet and appreciative encouragement. My role has now more importantly become that of recorder. The children love to see their ideas

listed, and there are always a few of the children who go and touch the words I write and read them. I have not actively taught the alphabet this year and the children have even surpassed where they would have been by mid-November in previous years."

Another point I noticed in this teacher's account: She describes the children taking field notes: "The field notes were detailed with drawings of the chef and the new experience of labeling the notes fascinated them. 'What do you think that starts with Mrs. B?' The children are not asking, 'What does that start with?' From their perspective it may be a matter of 'thinking' for Mrs. B. too! The shift is an important one. The climate of that classroom has changed and above all invites wondering as part of questioning and finding out what one needs to know. . ."

On Lesson Plans and Accountability

Tricia Pope
Sat, 9 Aug 1997 11:27:26 -0600

It's good to have it. In many of our school districts, we are required to make year plans, unit plans, and lesson plans, and forward them to our school principal/administrator in advance. Year plans are done before the first day of classes, unit plans are done before the units start, and lesson plans are done on a daily basis. Fully developed lesson plans are not always a requirement as the paper work becomes over-abundant, but teachers are expected to outline that which they plan to do that week. This is the part I have difficulty with—how to do a year plan with this approach. Yet, the child study center does make a year plan of which aspects of the curriculum that they plan to teach. They just incorporate this into the projects that are occurring. It sounds great in theory, but I'm not so sure how it works for them. I suppose one could have a year plan just as a guide, but not feel pressured to stick to it.

Barb Gallick
Fri, 14 Nov 1997 08:35:54 -0600

In our program we use a one-page sheet that is called "Highlights of our Day." We fill this sheet out each day at the lunch tables with the children so it is written after our day's activities and our morning planning time together. This sheet is placed on the parent table so all parents can read what happened that day when they pick up their children. The children and teachers both contribute statements to the highlights page so it reflects what the children remember as significant for the day, and the teachers make sure all curriculum areas that were covered that day are reflected also. We no longer do lesson plans in the traditional sense that have pre-planned activities. We do our planning with the children. The head teachers do create a topic web to help guide themselves, and we now create a topic web with the children at the beginning of a project.

Sylvia Chard
Sun, 07 Dec 1997 11:57:32 -0700

Projects typically last several weeks so a "project lesson plan" is not something that exists... However, that's not to say that no planning takes place in the context of a project (defined here as an in-depth study of a topic). Instead, any of the following may be useful: 1. plans for discussions with the children, whole class and small group. 2. weekly plans for any time project work is going on during the week. 3. day plans for days in which particular work is being completed or initiated. 4. plans for strands of work on different aspects of the project in progress 5. plans for wall displays of children's work, rubrics, or lists posted by the teacher, the contents of which have been derived or negotiated with the children. 6. plans for/in project folders for each child in which a record is kept of the work in progress or completed (kept by the children or the teacher depending on the age/capability of the children).

If you are asking about the preparation teachers have to do to be ready for the project work each day, then there may well be notes the teacher writes for herself to be well prepared to facilitate any of those items in the above list. In the second Practical Guide to the Project Approach (Scholastic) I have written five basic structural features of a project: discussion, field work, representation, investigation, and display. Different kinds of planning are required for each of these features as they function to facilitate the progress of the work of any project.

If you are planning a discussion, it is a good idea to have a plan of the issues you would like to discuss or information you would like to share with the children. Planning for a discussion would include anticipation of the possible contributions the children might make to the discussion, too. If you are planning to discuss on-going work with the children, this too could benefit from advanced planning. (Though of course your discussion with the children may go well beyond your initial plan.) In the case of field work, there is a good deal of planning to do: preliminary visit(s) to the field site, permission for access and from parents, preparing the receiving personnel, inviting volunteer and expert help, transportation arrangements (if necessary), photography, clip boards, etc. for field notes and sketches, and prior experience of the use of these tools, etc. etc. In the case of representations the children have to be aware of the range of different kinds of representation they can choose from to present the data they have collected. They also need some help with self-evaluation as they apply criteria of quality work to their representations. Planning is required here over the short and longer term.

Investigations require planning by the teacher and children around teacher's suggestions, children's initial intentions, materials, procedures, time commitment, self-evaluation criteria, etc. etc. Displays require advanced planning so the classroom walls can provide a constantly changing documentation of the progress of the project week by week.

On Webbing

Sylvia C. Chard
Tue, 23 Dec 1997 15:44:21 -0700

Hi, Lisa and others interested in project webs, I wanted to add another dimension to the talk about webs last week but I was unable to send messages to the list at that time. Now I'm back, so here is some of what I wanted to share. Lisa showed us webs of what the children could do, and did, in the course of their projects on "babies" and "fish." This is a very helpful use of webs in planning. I also encourage teachers to use a different kind of web in advance of the project. It can be very helpful to generate and sort ideas of what the children might know about the topic and what they might learn. I believe it is good for teachers to begin by using the web technique to reflect on their own general knowledge and experience as a basis for guiding the project from the beginning. I have described this kind of web in the first Practical Guide (Scholastic). This information web helps with early class and small group discussions and for anticipating the directions the children's interests might lead the investigation. This kind of web involves the teacher in a generative process which corresponds to the Reggio Emilia teachers' term "progettazione" or "projecting," in the sense of "anticipation" or predicting what the children might know, want to ask questions or find out about, and thinking of suggestions the teachers might make in support of the children in their investigations. I have attached a web of this type, on "babies," to this message. The category headings label groups of words associated semantically; e.g., What babies do, Parts of a baby, What you have to do to care for a baby, What babies eat, What babies wear, Who babies belong to, etc. etc. If you are unable to access the attachment I can try saving it in a different form or simply listing the categories of ideas within the email message. Let me know if you can't receive it. Once the teacher has made an information web of this kind, (s)he is in a good position to respond constructively to any stories the children might share in the first phase of a project, through telling, drawing, dramatic play, model making, block construction, etc. etc. Kindergarten children can enjoy looking at the words organized in a simple web and generating their representations.

One kindergarten teacher who did her first project this fall recounted how the children enjoyed sitting on the carpet and tracing their fingers over the words on the web and sounding them out for each other at odd times during the day. She wrote: "One day I was watching a boy sitting by the topic web and tracing his finger over the words then telling his friend that he could read. Slowly he said some of the words, sounding the letters out very carefully. His friend was amazed and said, "How do you do that?" The child very seriously replied, "It's in the sounds of the letters; if you know what the letters look like you can put the sounds together to make words." His amazed friend whispered, "Is it hard?" "Not really," the other child replied, "It just takes some practice."

P. Pope
Sat, 7 Feb 1998 21:33:08 -0700

Planning for grade 3's, I have come to a challenge when it comes to webbing. I like to make things look detailed and organized as best as I can. The dilemma that I have is how many sub-divisions to make. For instance, when we branch off from the main topic of HOMES, then go to "occupations," I would be inclined to branch off to 3 or 4 types of occupations such as "tradesmen" (plumber, construction workers, electrician, roofer, etc.), "legal" (lawyer, real estate agent). Although this would make the web look more organized and classified, I wonder how realistic it is when planning a web WITH children. If these classification words do not come up in our brainstorming, then is it fair for teachers to add them onto the web just to make it more organized, and perhaps less like a "spider." Also, how far should one branch out? I see that a web could go one infinitely as we went from homes to computers (an object within homes), and wondered how far we should branch off from "computers." Would anyone like to tell me about their webbing experiences themselves on various topics? How long do they usually take you? How do you organize the children to get them doing it?

In response to a question about involving children more in the organization of the web:
Sydney Gurewitz Clemens
Sat, 7 Feb 1998 21:42:07 -0800

Why not find the children who would like to reorganize what has been brainstormed and have them work (separately or together) on making alternative displays of the web, with the requirement that they must include everything in the original. You can invite them to cluster what they think fits together, and to compare the resulting hierarchies. . . this is a higher-order thinking skills task, and a great one for 8-9 year old children.

Cherie Rodriguez
Sun, 8 Feb 1998 17:59:57 -0500

. . . three topics have come up this week that I feel I can speak to. . .The first is webbing. When Sylvia Chard has come to our school in Hollywood, Maryland, she has done some webbing with our teachers using small post-its. This process works well with the children. Because we have benchmarks and outcomes that must be covered in our first- and second-grade multi-age classrooms, the process of brainstorming with the children on a web with post-its, and then grouping the post-its into classifications, helps us to see where the children's experience and knowledge lies and how much we can insert our curriculum mandates into the project. A final draft of the web after moving the post-its into categories with the children can be displayed throughout the work on the project. All of the many ideas that they give may not be explored thoroughly, but I can get an idea of how important each idea is to the children through their input and explanations.

. .....

My class size is 25 children—12 second graders and 13 first. I have inclusion children in my class. There is no full-time help, but I have great support from resource people. Why did you

ask how I keep a permanent record of the children's input on a web? I can think of some ways to do that, but don't understand why it would be important at the beginning phase of a project. The children could write about the webbing process in their work logs. They could tell in writing or dictation what they contributed to the web and what areas of the topic look interesting to them. They could go on to supply a plan of investigation. We do a lot of written planning in our program, so this would work with our children. A teacher that I work closely with used post-its as children worked in pairs to make webs this month and had success. I have found that webbing is a useful tool to open minds and get involvement. I haven't used the process for accountability or assessment. Does that help?

On Field Sites and Field Work

Margaret Brooks
Tue, 23 Apr 1996 08:36:27 -0700

Hello again to all other project enthusiasts. Here in Alberta we are beginning to see the first signs of spring. The snow has almost gone and the ground is starting to thaw. Many of our garden centers are just setting up for the rush of eager gardeners getting prepared for the Victoria Day holiday on May 20th. This is traditionally the weekend everyone plants out the garden here. After May 20th we have less chance of frost damaging our plants. However, the children in our centre (two classes of twenty, four- and five-year-olds) have been studying plants for a while. One of our parents is a horticulturist and has built us an indoor growing house. For the past month she has brought in a variety of spring bulbs at various stages of development. The children have drawn and painted and kept records of these changes and comparisons. After six months of snow and no greenery they were real symbols of hope that spring might eventually arrive. The children have become very interested in plants and so we are in the process of developing a project around several specific aspects of plants and growing. It is not as easy as we first thought it might be, and I hope to share some of the problem solving both staff and children have been wrestling with as we progress. Today I wanted to share a story about our field visit with you because I know that this is the time of year, here anyway, that many classes go out on field visits. I was particularly impressed with the teacher in Phoenix and her multiple visits and preparation for planting saguaro. Not all field work is as thoughtful or successful, yet as an important element of project work it is worth giving more thought to. I hope my story will spark some discussion. (Sorry it's a little long.)

We planned a visit to a fairly large greenhouse and garden shop, and the horticulturist volunteered to talk with the greenhouse staff before our visit. I told her we wanted to collect information that would allow us to not only take better care of the plants we had started in our class and how to plant out our garden when the time came, but we also wanted to get a sense of how a garden shop and greenhouse operated so that we might be able to set up our own in a socio-dramatic context within our classroom. We have found that collecting information is very much like going on a shopping expedition; it is much easier, and more productive, to be an informed consumer with six children than it is to herd a group of twenty children to pick up a grocery list. We are lucky to have a pool of parents and students who are used to doing field work with us, so we divided the children into groups of six with one adult. The children had many questions to ask and, after two years experience of collecting field notes with us, were all prepared with clipboards, pencils, markers, and watercolors. Unfortunately the personnel at the greenhouse had had many years of experience of herding groups of kindergarten children through in half-hour sessions. Our tour guide had taken a course on "edutainment" and kept up a fast pace lest the children got bored. She bombarded the children with information, and to keep their interest she focused on the novel and exotic. Holding up an aloe vera plant, she asked one of her few questions, "Where does this plant grow?" "My grandma has one." volunteered a child. "It grows in Arizona," they were told. "My grandma went there once," volunteered the same child, desperately trying to make some

connection. Our children tried hard to sidetrack our tour guide with questions and comments. Most of them eventually gave up and as I scanned my usually attentive class I could see: three girls holding a very quiet discussion around a display of bulbs, another group examining a spider, and someone's toy car being surreptitiously passed around for inspection. Many others had started to wander off, and we desperately tried to round them up and refocus them. After our tour we politely thanked them and asked if we could spend some time just looking around in small groups. They assured us that there was nothing more to see, but if we really wanted to it was OK.

Each group went off to examine a different part of the building. My group headed for the garden tools section. What a selection! I didn't know there were so many tools. One boy found five different kinds of spades, each with a specific purpose, a different name and shape, and a different price. Someone else found a range of tools that all fitted on one handle and spent much time trying them all out and guessing what they would all be used for. We found that there was everything from tiny watering cans to giant hoses and sprinklers for watering plants; each had a different way of operating. We found a sales clerk and asked them firstly more about the tools, then all about their job. The children then set to work to draw what they felt was important, and copied down many names, labels, and prices. My group was scattered over the floor, drawing intently, when the tour guide came past. She was amazed at their concentration and the detail in their drawings. She came back twenty minutes later and they were still at it. This time she stopped and said she had never seen anyone do this before. I explained that we had found that the process of drawing helped the children focus on detail, and the drawings were very useful when we returned to the class because the children referenced them when they set up their own garden store or made models. She told us that she had received "thank you" drawings from kindergarten classes, but they usually just showed a picture of the playpark the children had played in after the tour or her dog who had been around to pet. Never tools! Our other small groups had similar experiences and together we collected a huge range of information that was detailed and relevant. There are many, many ways of doing field work, but I worry that sometimes field work has tended to be seen as a field trip—"trip" being the operative word. Looking forward to hearing some field work stories and tips.

Eileen Tracy Borgia
Tue, 23 Apr 1996 11:34:56 -0600

. . . Another of our tasks when doing project work is to educate the hosts of the field site, and I was impressed with your tactful way of teaching about project work. As Sylvia and Lilian help us to see, a field experience can be very useful in Phase 2, as a part of the investigation, rather than where it would be found in more traditional approaches, either at the beginning or as a culmination activity. Best wishes for some terrific gardening!

Sylvia Chard
Sun, 26 Oct 1997 16:35:24 -0700

I have responded to individual messages before in relation to the first phase of a project. Today I would like to try a response to this message about some features of the second phase. At 10:58 AM 10/26/97 you, Cynthia, wrote: *I am currently in my second year of teaching and I have been very interested in the Project Approach. Right now, we are doing a unit on food. We just visited Smitty's grocery store last week, and we are in the process of making our own grocery store in the classroom. My problem is this: I know I want to do this, but I'm not sure how to go about it. Do I need to just let the children take over? How do I know when I need to step in? I don't want to take any ownership away from the children. Any insight would be really helpful to me at this time! Thanks. Cynthia*

First, however, it would help to know how old the children are. Meanwhile, I am going to respond as if your children are between the ages of 4 and 7. I hope I will be clear enough in my suggestions to enable readers to be able to adapt what I am saying to apply to older or younger children.

1. Field work follow-up. You wrote: We just visited Smitty's grocery store last week, and we are in *the process of making our own grocery store in the classroom.* This is a wonderful way to follow up a field visit.

2. As the teacher, your preparation for this process will involve thinking of all the possible things the children might do as part of "setting up the store." This preparation will be done outside the classroom between each class session and will draw on your observation of the children's growing interest and what they want to accomplish. The children will need to: plan the construction (review and discuss their field experience and field notes), collect materials (brainstorm what they might need to construct a store in the classroom), make furniture, equipment, goods, etc. (stock the place), take roles (what people do in a grocery store, why they are there or go there), agree on procedures and sequences ("event knowledge" and "script knowledge," Nelson), hear stories about shopping (children's literature), tell stories about shopping (continue to share their own experiences), practice skills needed to make purchases and take store worker roles, continue to elaborate their understanding, invite parents to help, etc. etc. Make a (on chart paper) web of all these ideas so you can keep track of what is happening and what needs to be provided, etc.

3. You wrote: *Do I need to just let the children take over?* I think that would be an unworkable abdication of your responsibility as a teacher. Your job is to facilitate the construction of the grocery store. You will draw on all the skills and knowledge you know the children currently have. You will also arrange for the children to acquire further knowledge with your help through stories, visiting experts to be interviewed in the classroom, a second visit (maybe) to the grocery store, parents'involvement, etc., etc. Once you embark on several weeks of grocery store construction and dramatic play, your work is to support the children, enabling them to realize their intentions and bring them into being.

Documentation of the main achievements, conversations, ideas, etc. after each session helps a great deal.

4. You wrote: *How do I know when I need to step in?* You step in right away, alongside the children. What does this look like? It means having a (mostly brief, depending on the age of the children) whole group discussion with the children at the beginning (planning) and end (debriefing, review) of every project time period. It means having some discussion with small groups of children who are willing and able to take responsibility for particular tasks needed for the construction and running of the store. It means encouraging children to talk with each other about what is needed, to be on hand with children as they construct particular parts of the equipment or design the overall layout, or engage in role play. It means continuing to collect and post questions which can be answered through phone calls, interviews, book research, etc. If you have a large class, it may be that some children are painting, drawing, and making one or two small constructions in shoe boxes or larger boxes or working in the sand tray to replicate a grocery store scene, or playing roles, or looking at pictures and words in the books you have provided to help the children research their topic.

5. You wrote: *I don't want to take any ownership away from the children.* In the way I have described things happening in your classroom, any child who wants to be involved can be. Children who are painting pictures of the people in the store will be providing a review of what people do in the store, those looking at the books will bring their new or elaborated understanding to the construction and dramatic play, those working on the plan or the actual construction of shelves and counters will be able to share their work at the group time too. You and the children share ownership of the whole enterprise. Each child has ownership of whatever activity they are pursuing with your support, and groups have ownership over their activity. At group time, individuals and groups can ask other children in the class for their suggestions and ideas. Children can help others with problem solving and the elaboration of the whole scenario of grocery store role play. (By the way, especially at first, some children may not want or need to be involved and could be painting or drawing other things or writing or doing unsupervised practice tasks, if they are older.) When project work is complex and elaborate (built up slowly by children taking individual roles or working in pairs or small groups), the energy invested builds motivation and ownership. So long as the teacher doesn't do the work FOR the children (i.e., set up the store for them ahead of time and tell them how to sequence their actions in the store; in other words, direct and instruct all the activity), then the children will recognize the teacher's role as a supporting and guiding one. If the teacher supports the activity in this way, the children's sense of ownership of the process and its opportunities for development can be sustained and enhanced throughout the project. Classroom wall displays of children's work (including photos, labeled, captioned) helps build up the information resources too. I hope this helps. Let us know what happens! Best wishes, Sylvia

Candy Ganzel
Tue, 28 Oct 1997 19:40:40 -0500

We are still working on our Fire Department project. (I teach kindergarten.) We have been to the fire station for our field work. The firemen were great!! They were concerned in the a.m.

about what we wanted to do. When the p.m. came, they were ready and waiting!! The children did a great job making many field notes. I took about 15 minutes to explain my expectations to the parents going along. This is well worth it. It makes the field work the children's, not the adults'. This week and last we are giving our reports to the class about what each of the groups found out. I gave each group about 20 minutes two days in a row to show everyone in their group their field notes and decide what are the most important things to share. The children do a great job of reporting. I let them take on the role of being in charge. One little boy named Kenny did a great job with this. Usually when it comes time for questions I have to help control it. He just took over. He asked "Are there any questions?" then he took their questions and many times he would ask someone else in the group to answer. It is great seeing their true personalities come out. I will write more about the reports as we finish.

Section 5

Resources for Implementing the Project Approach

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University of Illinois • 51 Gerty Drive • Champaign, IL 61820-7469
(800) 583-4135 • (217) 333-1386 • ericeece@uiuc.edu

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The Project Approach

Lilian G. Katz

Although project work is not new to early and elementary education (Sharan & Sharan, 1992), interest in involving children in group projects has been growing for several years. This renewed interest is based on recent research on children's learning (Kandel & Hawkins, 1992), a trend toward integrating the curriculum, and the impressive reports of group projects conducted by children in the pre-primary schools of Reggio Emilia (Edwards et al., 1993).

What is a Project?

A project is an in-depth investigation of a topic worth learning more about. The investigation is usually undertaken by a small group of children within a class, sometimes by a whole class, and occasionally by an individual child. The key feature of a project is that it is a research effort deliberately focused on finding answers to questions about a topic posed either by the children, the teacher, or the teacher working with the children. The goal of a project is to learn more about the topic rather than to seek right answers to questions posed by the teacher.

The Place of Project Work in the Curriculum

Advocates of the project approach do not suggest that project work should constitute the whole curriculum. Rather, they suggest that it is best seen as complementary to the more formal, systematic parts of the curriculum in the elementary grades, and to the more informal parts of the curriculum for younger children. Project work is not a separate subject, like mathematics; it provides a context for applying mathematical concepts and skills. Nor is project work an "add on" to the basics; it should be treated as integral to all the other work included in the curriculum.

Systematic instruction: (1) helps children *acquire* skills; (2) addresses *deficiencies* in children's learning; (3) stresses *extrinsic* motivation; and (4) allows teachers to direct the children's work, use their expertise, and specify the tasks that the children perform. *Project work*, in contrast: (1) provides children with opportunities to *apply* skills; (2) addresses children's *proficiencies*; (3) stresses *intrinsic* motivation; and (4) encourages children to determine what to work on and accepts them as experts about their needs. Both systematic instruction and project work have an important place in the curriculum.

For older children able to read and write independently, project work provides a context for taking initiative and assuming responsibility, making decisions and choices, and pursuing interests. For younger children, project work usually requires teacher guidance and consultation.

Themes, Units, Projects: Some Important Distinctions

Related to project work are themes and units. A theme is usually a broad concept or topic like "seasons," or "animals." Teachers assemble books, photographs, and other materials related to the theme through which children can gain new awareness. However, in theme work children are rarely involved in posing questions to be answered or taking initiative for investigation on the topic. Nevertheless, theme topics can provide good subtopics for project work.

Units usually consist of preplanned lessons and activities on particular topics the teacher considers important for the children to know more about. When providing information in units, the teacher typically has a clear plan about what concepts and knowledge the children are to acquire. As with themes, children usually have little role in specifying the questions to be answered as the work proceeds.

Both themes and units have an important place in the early childhood and elementary curriculum. However, they are not substitutes for projects, in which children ask questions that guide the investigation and make decisions about the activities to be undertaken. Unlike themes and units, the topic of a project is a real phenomenon that children can investigate directly rather than mainly through library research. Project topics draw children's attention to questions such as: How do things work? What do people do? and What tools do people use?

Activities Included in Project Work

Depending on the ages and skills of the children, activities engaged in during project work include drawing, writing, reading, recording observations, and interviewing experts. The information gathered is summarized and represented in the form of graphs, charts, diagrams, paintings and drawings, murals, models and other constructions, and reports to peers and parents. In the early years, an important component of a project is dramatic play, in which new understanding is expressed and new vocabulary is used.

Project work in the early childhood and elementary curriculum provides children with contexts for applying the skills they learn in the more formal parts of the curriculum,

and for group cooperation. It also supports children's natural impulse to investigate things around them.

The Phases of a Project

In *Phase 1* of a project, called *Getting Started* by Katz and Chard (1989), the children and teacher devote several discussion periods to selecting and refining the topic to be investigated. The topic may be proposed by a child or by the teacher.

Several criteria can be considered for selecting topics. First, the topic should be closely related to the children's everyday experience. At least a few of the children should have enough familiarity with the topic to be able to raise relevant questions about it. Second, in addition to basic literacy and numeracy skills, the topic should allow for integrating a range of subjects such as science, social studies, and language arts. A third consideration is that the topic should be rich enough so that it can be explored for at least a week. Fourth, the topic should be one that is more suitable for examination in school than at home; for example, an examination of local insects, rather than a study of local festivals.

Once the topic has been selected, teachers usually begin by making a web, or concept map, on the basis of "brainstorming" with the children. Displaying a web of the topic and associated subtopics can be used for continuous debriefing discussions as the project work proceeds. During preliminary discussions the teacher and children propose the questions they will seek to answer through the investigation. During the first phase of the project, the children also recall their own past experiences related to the topic.

Phase 2, Field Work, consists of the direct investigation, which often includes field trips to investigate sites, objects, or events. In Phase 2, which is the heart of project work, children are investigating, drawing from observation, constructing models, observing closely and recording findings, exploring, predicting, and discussing and dramatizing their new understandings (Chard, 1992).

Phase 3, Culminating and Debriefing Events, includes preparing and presenting reports of results in the form of displays of findings and artifacts, talks, dramatic presentations, or guided tours of their constructions.

Projects on Everyday Objects

One example of an investigation of an everyday object in the children's environments is a project called "All About Balls." A kindergarten teacher asked the children to collect from home, friends, relatives, and others as many old balls as they could. She developed a web by asking what the children might like to know about the balls. The children collected 31 different kinds of balls, including a gumball, a cotton ball, a globe of the earth, and an American football (which led to a discussion of the concepts of sphere, hemisphere, and cone). The children then formed subgroups to examine specific questions. One group studied the surface texture of each ball, and made rubbings to represent their findings; another measured the circumference of each ball with pieces of string; and a third tried to determine what each ball was made of.

After each group displayed and reported its findings to the others, the class made and tested predictions about the balls. The children and the teacher asked which balls would be the heaviest and which the lightest, how the weight of the balls was related to their circumference, which balls would roll the farthest on grass and gravel surfaces after rolling down an inclined plane, and which balls would bounce the highest. While the children tested their predictions, the teacher helped them explore such concepts as weight, circumference, and resistance. Following this direct investigation, the children engaged in a discussion about ball games. They discussed which balls were struck by bats, clubs, mallets, hands and feet, racquets, and so forth.

Conclusion

A project on a topic of real interest to children, such as the "All About Balls" project described here, involves children in a wide variety of tasks: drawing, measuring, writing, reading, listening, and discussing. From working on such a project, children learn a rich new vocabulary as their knowledge of a familiar object deepens and expands.

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Child-Initiated Learning Activities for Young Children Living in Poverty

Lawrence J. Schweinhart

Should Head Start and other preschool programs for young children living in poverty center on teacher-directed, large-group academic lessons or on teacher-supported, child-initiated learning activities? The concerns reflected in this long-standing debate are that an exclusively teacher-directed approach fails to encourage children's social and emotional development and creativity, while an approach based exclusively on child-initiated activities may not sufficiently stimulate poor children's academic development. These concerns are echoed today in the struggle of early childhood educators to cope with academic-learning mandates that conflict with their own child-centered dispositions, particularly in school districts that have been less successful in helping children achieve academic success. This Digest discusses the findings of empirical studies on teacher-directed and child-initiated preschool programs.

Long-term Preschool Curriculum Comparison Studies

Three long-term preschool curriculum comparison studies began in the 1970s—the High/Scope Preschool Curriculum Comparison Study (Schweinhart & Weikart, 1997), the Louisville Head Start Study (Miller & Bizzell, 1983), and the University of Illinois Study (Karnes, Schwedel, & Williams, 1983). All three included the Direct Instruction model—which offered scripted, teacher-directed academic instruction—and a Nursery School model, in which children initiated their own learning activities with minimal teacher support. The High/Scope study included the High/Scope model, in which children initiated learning activities with substantial teacher support. The Louisville and Illinois studies included several additional teacher-directed models and the Montessori model, which encouraged child-initiated activities with didactic materials.

These three studies found that children in Direct Instruction programs intellectually outperformed children in child-initiated-activities programs during and up to a year after the preschool program, but not thereafter. In the Louisville study, the Nursery School children showed higher verbal-social participation and increased more in ambition and aggressiveness than did the Direct Instruction children, but both groups scored lower than their peers on inventiveness. In the Illinois study, 78% of the Nursery School group, but only 48% of the Direct Instruction group and 47% of the no-program group graduated from high school.

In the High/Scope study, the child-initiated-activities groups significantly surpassed the Direct Instruction group on 10 early adult outcomes, more than were found throughout their childhoods. Compared to the Direct Instruction group, both High/Scope and Nursery School groups had fewer members treated for emotional impairment or disturbance (6% vs. 6% vs. 47%) and more who engaged in volunteer work (43% vs. 44% vs. 11%). Compared to the Direct Instruction group, the High/Scope group had fewer members ever arrested for a felony (10% vs. 39%), ever arrested for a property crime (0% vs. 38%), reporting 10 or more acts of misconduct (23% vs. 56%), and identifying people who gave them a hard time (36% vs. 69%); and more members married and living with their spouses (31% vs. 0%) and planning to graduate from college (70% vs. 36%). Compared to the Direct Instruction group, the Nursery School group had fewer members arrested for a felony at ages 22-23 (9% vs. 34%) and ever suspended from work (0% vs. 27%).

Planned Variation Head Start and Follow Through

The national evaluation of Planned Variation Head Start (1969-72), included some 6,000 children at 37 sites (Datta, McHale, & Mitchell, 1976). Its dozen models included the Direct Instruction model and at least two child-initiated-activities models—the High/Scope model and the Enabler model guided by local early childhood consultants. Despite the many design problems associated with a study of this size, two findings distinguished certain program groups from the other program and comparison groups:

- Teacher-directed groups had the highest scores on the achievement tests given at the end of the preschool program.
- The High/Scope group had the greatest IQ gains—23 points compared to no more than 5 points for any of the other groups.

The Follow Through Project (1967-95) was designed to follow through on Head Start by providing similar services from kindergarten through third grade. It never served more than a small fraction of the nation's children who attended Head Start, but did support the development of 20 early elementary curriculum models. A national evaluation found that although program outcomes varied more by site than by curriculum model, Direct Instruction students did significantly better than their peers in regular classes—and better than students in classes based on child-initiated learning activities—on school achievement, self-esteem, and achievement responsibility (Kennedy, 1978). Further, in a few communities, Direct Instruction researchers found evidence that some Direct Instruction students had higher ninth-grade achievement-test scores, a higher high school graduation rate than their peers, and fewer grade repetitions and absences from school (Gersten & Keating, 1987). Direct Instruction's greater success in elementary school than in preschool may have been partly because elementary-school children were better able than preschoolers to adhere to its strict rules of behavior and principles of mastery learning, and partly because elementary-school teachers more fully embraced its methods than did preschool teachers.

Recent Short-term Preschool Studies

Six early childhood curriculum comparison studies have been conducted in the past decade: one study contrasting High/Scope classes with non-High/Scope classes, and five studies contrasting developmentally appropriate practice emphasizing child-initiated activities and developmentally inappropriate practice emphasizing teacher-directed lessons (Dunn & Kontos, 1997).

In the Training for Quality study, Epstein (1993) found that observers rated preschool classes with High/Scope-trained teachers significantly higher than preschool classes whose teachers were not trained by High/Scope. High/Scope training enabled children to plan, carry out, and review their own activities, and it helped teachers use adult-child interaction to promote children's reasoning and language skills. Observers scored children in the High/Scope classes significantly higher at the end of the school year in initiative, social relations, music and movement skills, and overall development.

Burts et al. (1992) have engaged in a program of research based on assessing teachers' developmentally appropriate beliefs and practices and related child outcomes. They found that kindergarten children in developmentally inappropriate classes exhibited significantly more stress behaviors (such as complaints of feeling sick, stuttering, fights, tremors, nervous laughter, and nail biting) than did those in developmentally appropriate classes, particularly males and African-American children.

DeVries and her associates closely observed three kindergarten classes using Direct Instruction, a constructivist approach based on child-initiated activities, and an eclectic approach. Analyzing two game-like activities, they found that the children from the constructivist class were more interpersonally interactive, with a greater number and variety of negotiation strategies and shared experiences, than children from the other two classes (DeVries, Reese-Learned, & Morgan, 1991). Although the Direct Instruction class began kindergarten with significantly higher achievement test scores than the constructivist class, the significant differences between the two classes disappeared by third grade.

Marcon (1992) identified three preschool models operated in the Washington, DC, public schools—teacher-directed, child-initiated, and "middle-of-the-road"—and examined the development of a random sample of 295 children attending these types of programs. Children from child-initiated classes showed the greatest mastery of basic reading, language, and mathematics skills, followed by children from teacher-directed classes, then children from "middle-of-the-road" classes (Marcon, 1992). At fourth grade, this same ranking of curriculum types appeared on children's grade point averages, overall and in most subject matter areas.

Similarly, in detailed observations of 62 preschool and kindergarten classes in the Los Angeles area, Stipek, Daniels, Galluzzo, and Milburn (1992) found three types of programs—didactic, academic programs in a negative social context; child-initiated-activities programs de-emphasizing academics in a positive social context; and intermediate programs between these two extremes. They found no examples of didactic, academic programs in a positive social context.

In the Academic Environments study, Hirsh-Pasek, Hyson, and Rescorla (1990) studied 90 4- and 5-year-olds in a variety of academic and child-initiated preschool programs in affluent areas in Philadelphia and Delaware and followed up 56 of them through the end of kindergarten. Preschool program type had no significant influence on children's academic or logical skills at the end of kindergarten.

The relevant evidence from these studies suggests that preschool programs based on child-initiated learning activities contribute to children's short- and long-term academic and social development, while preschool programs based on teacher-directed lessons obtain a short-term advantage in children's academic development by sacrificing a long-term contribution to their social and emotional development. On this basis, research supports the use by preschool programs of a curriculum approach based on child-initiated learning activities rather than one based on teacher-directed lessons.

For More Information

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(217) 333-1386

ERIC Digest

EDO-PS-93-1

Problem Solving in Early Childhood Classrooms

Joan Britz

Problem solving is the foundation of a young child's learning. It must be valued, promoted, provided for, and sustained in the early childhood classroom. Opportunities for problem solving occur in the everyday context of a child's life. By observing the child closely, teachers can use the child's social, cognitive, movement, and emotional experiences to facilitate problem solving and promote strategies useful in the lifelong process of learning.

Learning Through Problem Solving

By exploring social relationships, manipulating objects, and interacting with people, children are able to formulate ideas, try these ideas out, and accept or reject what they learn. Constructing knowledge by making mistakes is part of the natural process of problem solving. Through exploring, then experimenting, trying out a hypothesis, and finally, solving problems, children make learning personal and meaningful. Piaget states that children understand only what they discover or invent themselves (1963). It is this discovery within the problem solving process that is the vehicle for children's learning. Children are encouraged to construct their own knowledge when the teacher plans for problem solving; bases the framework for learning in problem solving; and provides time, space, and materials.

The Teacher's Role

Changing through problem solving is modeled by adults (Bloom, Sheerer, and Britz, 1991) and facilitated by the teacher in the classroom environment. When teachers articulate the problems they face and discuss solutions with children, children become more aware of the significance of the problem-solving process. Being a problem solver is modeled by the teacher and emulated by the children. The teacher's role is two-fold: first, to value the process and be willing to trust the learner, and second, to establish and maintain a classroom environment that encourages problem solving. It is the attitude of the teacher that must change first in the problem-solving classroom. Values and goals must be clearly defined to include a child-centered curriculum, the development of communication skills, promotion of cooperative learning, and inclusion of diverse ideas.

The teacher must be willing to become a learner, too. By being curious, observing, listening, and questioning, the teacher shares and models the qualities that are valued and promoted by the problem-solving process.

Planning for Problem Solving

A curriculum that accommodates a variety of developmental levels as well as individual differences in young children sets the stage for problem solving (Bredekamp, 1987). Choices, decision making, and a curriculum framework that integrates learning, such as Katz and Chard's project method (1989), are especially appropriate for young learners. The project approach facilitates cooperative learning and promotes diverse ideas. Donna Ogle's K-W-L (what you KNOW, what you WANT to know, and what you have LEARNED) is another method of organizing work that promotes problem solving. Themes, units, webbing, and the KWL method are all ways of organizing curriculum that can support problem solving (Britz and Richard, 1992). Beginning with the needs and interests of the children, problem solving develops from meaningful experiences important to the children. The teacher-designed curriculum provides the classroom basis for these experiences.

For example, a second grade investigation of waste materials from a classroom led one group of young children to explore the topic in an integrated way. Reading, writing, counting, measuring, interviews of community people, and science experiments were planned, initiated, and reported. Solutions to many problems posed during the investigation were tried out and some were found to be successful. Through group work, individuals were able to participate and communicate as cognitive and social needs were met. Each child, at individual levels and in individual ways, was successful within the group experience. Problem solving empowers children.

Providing for Problem Solving

Problem solving is a skill that can be learned and must be practiced. It is facilitated by a classroom schedule that provides for integrated learning in large blocks of time, space for ongoing group projects, and many open-ended

materials. The teacher provides the time, space, and materials necessary for in-depth learning.

- Time: Teachers can provide for problem solving by enlarging blocks of learning time during the school day. Because making choices, discussing decisions, and evaluating mistakes takes time, large time blocks best suit the problem-solving process. It is important that children know they have time to identify and solve problems.
- Space: Projects and group meetings may require an assessment of classroom space. Moving desks and tables together facilitates communication and cooperation in the classroom. Once the teacher has observed the patterns of traffic in the classroom, equipment can be moved or eliminated to promote problem solving.
- Materials: The open-ended materials that are needed for the construction and concrete solving of problems should be safe, durable, and varied. Well-marked storage units should be easily accessible to children, and materials should be available for ongoing exploration and manipulation. Access to a variety of materials encourages children to use materials in new and diverse ways. This freedom promotes problem solving.

The Problem-Solving Model

Individuals or groups can solve problems. Group problem solving is important to young children because many diverse ideas are generated. Both individual and group processes should be included in the early childhood classroom. Becoming skillful at problem solving is based on the understanding and use of sequenced steps. These steps are:

1. Identifying the problem,
2. Brainstorming a variety of solutions,
3. Choosing one solution and trying it out, and
4. Evaluating what has happened.

Often the most difficult of these steps is identifying the problem. If Bill cries, "Alice is hitting me," the problem to be solved is not the hitting but, rather, *the reason why* Alice is hitting Bill. Therefore, the investigation of solutions must relate to the cause of the problem instead of its effect. Brainstorming gives children practice in communication, negotiation, and cooperation skills. Learning to express individual ideas in a diverse society is important. By choosing and trying out a solution, learners develop empathy, come to consensus, and share the responsibility of the decision. These are valued learnings in a democratic society. Finally, by evaluating the problem-solving process, children assess their choices and mistakes and learn to be independent evaluators of their work.

The process of problem solving—making choices and learning from them—is facilitated by teachers who observe, listen, and ask open-ended questions that further the process: questions such as, "What will happen if...?" and "What other ways can you think of...?" Problem solving becomes a cycle of learning when mistakes are made and different solutions have to be tried. This discovery process allows children to construct their own learnings. Most problems have more than one solution; some problems cannot be solved. Experiences with these sorts of problems promote learning in young children.

Choosing Good Problems

Goffin (1985) provides teachers with guiding questions that will help them identify appropriate problems for young children. Some of these are:

- Is the problem meaningful and interesting?
- Can the problem be solved at a variety of levels?
- Must a new decision be made?
- Can the actions be evaluated?

Problem solving is a way to make sense of the environment and, in fact, control it. The process allows children in an increasingly diverse world to be active participants and to implement changes. By including problem solving in the early childhood classroom, we equip children with a lifelong skill that is useful in all areas of learning.

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ERIC DIGEST
April 1996 • EDO-PS-96-2

The Contribution of Documentation to the Quality of Early Childhood Education

Lilian G. Katz and Sylvia C. Chard

The municipal preprimary schools in the northern Italian city of Reggio Emilia have been attracting worldwide attention for more than a decade. The reasons are many and have been discussed by a number of observers and visitors (see Edwards, Gandini, & Forman, 1993, and Katz & Cesarone, 1994.) While interest in what is now called the "Reggio Emilia Approach" is focused on many of its impressive features, perhaps its unique contribution to early childhood education is the use of the documentation of children's experience as a standard part of classroom practice.

Documentation, in the forms of observation of children and extensive recordkeeping, has long been encouraged and practiced in many early childhood programs. However, compared to these practices in other traditions, documentation in Reggio Emilia focuses more intensively on children's experience, memories, thoughts, and ideas in the course of their work. Documentation practices in Reggio Emilia preprimary schools provide inspiring examples of the importance of displaying children's work with great care and attention to both the content and aesthetic aspects of the display.

Documentation typically includes samples of a child's work at several different stages of completion; photographs showing work in progress; comments written by the teacher or other adults working with the children; transcriptions of children's discussions, comments, and explanations of intentions about the activity; and comments made by parents. Observations, transcriptions of tape-recordings, and photographs of children discussing their work can be included. Examples of children's work and written reflections on the processes in which the children engaged can be displayed in classrooms or hallways. The documents reveal how the children planned, carried out, and completed the displayed work.

It seems to us that high-quality documentation of children's work and ideas contributes to the quality of an early childhood program in at least six ways.

1. Enhancement of children's learning

Documentation can contribute to the extensiveness and depth of children's learning from their projects and other work. As Loris Malaguzzi points out, through documentation children "become even more curious, interested, and confident as they contemplate the meaning of what they have achieved" (Malaguzzi, 1993, p. 63). The processes of preparing and displaying documentaries of the children's experience and effort provides a kind of debriefing or re-visiting of experience during which new understandings can be clarified, deepened, and strengthened. Observation of the children in Reggio Emilia preprimary classes indicates that children also learn from and are stimulated by each other's work in ways made visible through the documents displayed.

The documentation of the children's ideas, thoughts, feelings, and reports are also available to the children to record, preserve, and stimulate their memories of significant experiences, thereby further enhancing their learning related to the topics investigated. In addition, a display documenting the work of one child or of a group often encourages other children to become involved in a new topic and to adopt a representational technique they might use. For example, Susan and Leroy had just done a survey of which grocery stores in town are patronized by the families of their classmates. When Susan wanted to make a graph of her data, she asked Jeff about the graph displayed of his survey about the kinds of cereal their class ate for breakfast. With adult encouragement, children can be resourceful in seeking the advice of classmates when they know about the work done by the other children throughout the stages of a project.

2. Taking children's ideas and work seriously

Careful and attractive documentary displays can convey to children that their efforts, intentions, and ideas are taken seriously. These displays are not intended primarily to serve decorative or show-off purposes. For example, an important element in the project approach is the preparation of documents for display by which one group of children can let others in the class working on other aspects of the topic learn of their experience and findings. Taking children's work seriously in this way encourages in them the disposition to approach their work responsibly, with energy and commitment, showing both delight and satisfaction in the processes and the results.

3. Teacher planning and evaluation with children

One of the most salient features of project work is continuous planning based on the evaluation of work as it progresses. As the children undertake complex individual or small group collaborative tasks over a period of several days or weeks, the teachers examine the work each day and discuss with the children their ideas and the possibilities of new options for the following days. Planning decisions can be made on the basis of what individual or groups of children have found interesting, stimulating, puzzling, or challenging.

For example, in an early childhood center where the teachers engage weekly—and often daily as well—in review of children's work, they plan activities for the following week collaboratively, based in part on their review. Experiences and activities are not planned too far in advance, so that new strands of work can emerge and be documented. At the end of the morning or of the school day, when the children are no longer present, teachers can reflect on the work in progress and the discussion which surrounded it, and consider possible new directions the work might take and what suggestions might support the work. They can also become aware of the participation and development of each individual child. This awareness enables the teacher to optimize the children's chances of representing their ideas in interesting and satisfying ways. When teachers and children plan together with openness to each other's ideas, the activity is likely to be undertaken with greater interest and representational skill than if the child had planned alone, or the teacher had been unaware of the challenge facing the child. The documentation provides a kind of ongoing planning and evaluation that can be done by the team of adults who work with the children.

4. Parent appreciation and participation

Documentation makes it possible for parents to become intimately and deeply aware of their children's experience in the school. As Malaguzzi points out, documentation "introduces parents to a quality of knowing that tangibly changes their expectations. They reexamine their assumptions about their parenting roles and their views about the experience their children are living, and take a new and more inquisitive approach toward the whole school experience" (Malaguzzi, 1993, p. 64).

Parents' comments on children's work can also contribute to the value of documentation. Through learning about the work in which their children are engaged, parents may be able to contribute ideas for field experiences which the teachers may not have thought of, especially when parents can offer practical help in gaining access to a field site or relevant expert. In one classroom a parent brought in a turkey from her uncle's farm after she learned that the teacher was helping the children grasp what a real live turkey looked like.

The opportunity to examine the documentation of a project in progress can also help parents to think of ways they might contribute their time and energy in their child's classroom. There are many ways parents can be involved: listening to children's intentions, helping them find the materials they need, making suggestions, helping children write their ideas, offering assistance in finding and reading books, and measuring or counting things in the context of the project.

5. Teacher research and process awareness

Documentation is an important kind of teacher research, sharpening and focusing teachers' attention on children's plans and understandings and on their own role in children's experiences. As teachers examine the children's work and prepare the documentation of it, their own understanding of children's development and insight into their learning is deepened in ways not likely to occur from inspecting test results. Documentation provides a basis for the modification and adjustment of teaching strategies, and a source of ideas for new strategies, while deepening teachers' awareness of each child's progress. On the basis of the rich data made available through documentation, teachers are able to make informed decisions about appropriate ways to support each child's development and learning.

The final product of a child's hard work rarely makes possible an appreciation of the false starts and persistent efforts entailed in the work. By examining the documented steps taken by children during their investigations and representational work, teachers and parents can appreciate the uniqueness of each child's construction of his or her experience, and the ways group efforts contribute to their learning.

6. Children's learning made visible

Of particular relevance to American educators, documentation provides information about children's learning and progress that cannot be demonstrated by the formal standardized tests and checklists we commonly employ. While U.S. teachers often gain important information and insight from their own first-hand observations of children, documentation of the children's work in a wide variety of media provides compelling public evidence of the intellectual powers of young children that is not available in any other way that we know of.

Conclusion

The powerful contribution of documentation in these six ways is possible because children are engaged in absorbing, complex, interesting projects worthy of documentation. If, as is common in many traditional classrooms around the world, a large proportion of children's time is devoted to making the same pictures with the same materials about the same topic on the same day in the same way, there would be little to document which would intrigue parents and provide rich content for teacher-parent or child-parent discussion!

For More Information

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The Language of Projects: A Glossary of Terms Used in the Project Approach

Culminating activities or **culmination:** A variety of activities during Phase 3 of a project, through which children summarize and explain their work and their findings to others.

Documentation: Processes of record keeping and samples of children's work at different stages of completion that reveal how children worked and the learning involved in the processes.

Field Visits: Planned visits to sites under investigation during a project.

Observational sketches: Drawings and sketches made while observing actual objects or places as a means of gathering descriptive and quantitative data.

Problem-solving: A process employed by all people at all levels of maturity of discovering or deducing new relationships among things observed or sensed. A method involving clear definition of the problem confronted, formation of hypothetical solutions, and tests of the hypotheses, until evidence warrants acceptance of a hypothesis.

Project: An extended, in-depth investigation of a topic, ideally one worthy of children's attention and energy. Projects involve children in conducting research on phenomena and events worth learning about in their own environments.

Web or **Topic web:** A graphic representation of the ideas associated with a topic.

Webbing: The process of discussion among teachers and children as they create a web.

Engaging Children's Minds:
The Project Approach Summer Institute

Ninth Annual Summer Institute at the Robert Allerton Conference Center
Monticello, Illinois
August 3-8, 1999

Join instructors Lilian G. Katz and Sylvia C. Chard, co-authors of *Engaging Children's Minds: The Project Approach,* for seminars on implementing the Project Approach and sharing experiences with the Project Approach.

The **Project Approach** involves children in investigating aspects of their own environments worth learning more about. During these investigations, children apply basic literacy and numeracy skills and strengthen their social competence; they learn research skills, conduct field work, and deepen their individual interest in various aspects of the topics investigated. In the Engaging Children's Minds summer institute, educators develop a thorough understanding of the Project Approach and how to apply it in the classroom. The in-depth, in-residence experience allows participants to exchange ideas with fellow educators and to interact with faculty who are readily available to answer any questions. The institute is specially designed for classroom teachers, for those responsible for early childhood pre-service and in-service teacher education, and for faculty members in teacher education.

The **August 3-8, 1999 session** is designed to help participants understand the three phases of the Project Approach and how to implement them in preschool and primary classrooms. Participants apply the techniques by working in teams on projects which include all the processes and procedures used by children engaged in project work. The program includes lectures, audiovisual presentations, group discussions, practical field work, and classroom activities. *(Note: The three-day session "Sharing Experiences in Using the Project Approach" will be offered again in the summer of 2000.)*

Registration Information

Advance registration for the institute is required by July 20, 1999. The registration fee ($975) includes: all course materials, airport shuttle to and from the conference center, all meals and refreshment breaks, and five nights' lodging. Participants pay for their own travel and incidental expenses. For a complete program brochure and registration information:
Call: 217-333-2880 Fax: 217-333-9561 Email: engaging@c3po.conted.uiuc.edu

Recommended Books

*Chard, S. C. (1998). *The Project Approach: A practical guide 1.* New York: Scholastic.

*Chard, S. C. (1998). *The Project Approach: A practical guide 2.* New York: Scholastic.

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*Katz, L. G., & Chard, S. C. (1989). *Engaging children's minds: the Project Approach.* Norwood, NJ: Ablex.

* Recommended for beginners.

ERIC Documents

ED413036 PS023951

Bringing Reggio Emilia Home: An Innovative Approach to Early Childhood Education.

Cadwell, Louise Boyd

1997

160p.; Foreword by Lella Gandini.

ISBN: 0-8077-3660-0; 0-8077-3661-9

Available From: Teacher's College Press, 1234 Amsterdam Avenue, New York, NY 10027; phone: 800-575-6566 (Cloth: ISBN-0-8077-3661-9, $43; Paper: ISBN-0-8077-3660-0, $19.95).

Document Not Available from EDRS.

Document Type: POSITION PAPER (120); PROJECT DESCRIPTION (141)

Geographic Source: U.S.; New York

Journal Announcement: RIEMAR98

This book is a collection of stories describing the Reggio Emilia approach to early childhood education, based on the author's internship in the Italian preschools and a 4-year adaptation effort in one American school. The book's prologue describes the author's work before using the Reggio Emilia approach, the history of Reggio Emilia, the fundamentals of the approach, and the College School of Webster Groves, Missouri where the approach was adapted to a U.S. setting. Chapter 1, "The Journey," details the initial exposure to the Reggio approach, securing an internship, and typical days in the Diana School in Italy. Chapter 2, "The Pleasures and Power of Playing with Materials," discusses the variety of materials available to students and tells stories describing projects children use to build an expanding awareness and understanding of the natural world. Chapter 3, "The Children and the Trees," describes how Reggio Emilia educators define and develop projects, and conveys the story of the children's study of trees and plants. Chapter 4, "Returning Home to St. Louis," describes the move to St. Louis to adapt the Reggio Approach for use in the College School, the importance of spoken language and conversations with children, and the use of visual arts. Chapter 5, "Transforming Space, Time, and Relations," deals with structural and other changes in the preschool space and working with colleagues and parents. Chapter 6, "The Children and the Garden," describes a project on plants which extended from preschool through kindergarten, conversations around the project and grow table designs, children's journals, and sculptures. (Contains 46 references.) (KB)

Descriptors: Childrens Art; Childrens Writing; Classroom Design; *Early Childhood Education; Educational Environment; *Educational Innovation; Foreign Countries; Instructional Materials; Journal Writing; Language Skills; Learning Activities; Personal

Narratives; Plants (Botany); Teacher Student Relationship; *Teaching Methods; Visual Arts; Young Children

Identifiers: Italy (Reggio Emilia); Project Approach (Katz and Chard); *Reggio Emilia Approach

ED407188 PS025523

SheJi HuoDong JiaoFa (The Project Approach). ERIC Digest.

Katz, Lilian G.

ERIC Clearinghouse on Elementary and Early Childhood Education, Champaign, IL.

Mar 1997

7p.; For English version, see ED 368 509.

Sponsoring Agency: Office of Educational Research and Improvement (ED), Washington, DC.

Contract No: RR93002007

Report No: EDO-PS-97-8

EDRS Price - MF01/PC01 Plus Postage.

Language: Chinese

Document Type: ERIC PRODUCT (071)

Geographic Source: U.S.; Illinois

Journal Announcement: RIESEP97

A project is an in-depth investigation of a topic worth learning more about, usually undertaken by a group of children within a class. The goal of a project is to learn more about a topic rather than to find answers to questions posed by a teacher. Project work is complementary to the systematic parts of a curriculum. Whereas systematic instruction helps children acquire skills, addresses children's deficiencies, and stresses extrinsic motivation, project work provides opportunities to apply skills, addresses children's proficiencies, and stresses intrinsic motivation. Projects differ from themes, which are broad topics such as "seasons," and units, which consist of preplanned lessons and activities on particular topics. In themes and units, children usually have little role in specifying the questions to be answered as the work proceeds. This is not the case in projects. Activities engaged in during project work include drawing, writing, reading, recording observations, and interviewing experts. Projects can be implemented in three stages. In Phase 1, "Getting Started," the teacher and children select and refine the topic to be studied. Phase 2, "Field Work," consists of investigating, drawing, constructing models, recording, and exploring. Phase 3, "Culminating and Debriefing Events," includes preparing and presenting reports of results. These characteristics of projects are exemplified in a project in which kindergartners collected 31 different types of balls. After collecting the balls, the class examined various characteristics of the balls, such as shape, surface texture, circumference, composition, weight, resistance, and use. This project involved children in a variety of tasks and gave children the opportunity to learn a new vocabulary as their knowledge of a familiar object deepened. (BC)

Descriptors: Activity Units; *Curriculum Development; Early Childhood Education; Elementary Education; *Group Activities; *Learning Activities; Student Motivation; *Student Participation; *Teacher Student Relationship; Thematic Approach

Identifiers: ERIC Digests; *Project Approach (Katz and Chard)

ED407074 PS025116
Engaging Children's Minds: The Project Approach.
Katz, Lilian G.; Chard, Sylvia C.
1989
189p.
ISBN: 0-89391-534-3
Available From: Ablex Publishing Corporation, P.O. Box 5297, Greenwich, CT 06831; phone: 203-661-7602; fax: 203-661-0792 (clothbound: ISBN-0-89391-534-3, $73.25; paperback: ISBN-0-89391-543-2, $39.50. Individual orders prepaid with credit card or personal check receive 40% discount on cloth edition and 20% discount on paper edition. Add $5 shipping for cloth edition and $4 shipping for paper edition).
EDRS Price - MF01 Plus Postage. PC Not Available from EDRS.
Document Type: BOOK (010); NON-CLASSROOM MATERIAL (055)
Geographic Source: U.S.; Illinois
Journal Announcement: RIESEP97
A project is an in-depth study of a particular topic that one or more children undertake, and consists of exploring the topic or theme such as "building a house" over a period of days or weeks. This book introduces the project approach and suggests applications and examples of this approach in action. Chapters are: (1) "Profile of the Project Approach," defining the approach and describing how project work complements other parts of the preschool curriculum; (2) "Research and Principles of Practice," discussing the conceptual basis for a project approach; (3) "Project Work in Action," illustrating the variety of project work; (4) "Features of the Project Approach," presenting guidelines for project topic selection, types of project activities, choices children make in project work, the teacher's role, and the three phases of project work; (5) "Teacher Planning," focusing on selecting a topic, making a topic web, deciding on a project's scope, and using five criteria for selecting and focusing on project topics; (6) "Getting Projects Started: Phase I," detailing ways to engage children's interest, initiate the introductory discussion, organize activities for early stages of extended projects, and involve parents; (7) "Projects in Progress: Phase II," discussing ways to maximize children's learning, interest, and motivation; (8) "Consolidating Projects: Phase III," presenting various approaches to concluding a project, such as making presentations to other classes or evaluating the project; and (9) "The Project Approach in Perspective," identifying the project approach as a complement and supplement to other aspects of the curriculum while giving teachers the opportunity to attend equally to social and intellectual development. Appendices present project descriptions, project guidelines, and a checklist for recording Missouri State Competencies applied in the course of project work. Contains about 140 references. (KDFB)
Descriptors: Active Learning; Child Development; Class Activities; Early Childhood Education; Instructional Innovation; *Learning Activities; Parent Participation; Primary Education; Student Motivation; *Student Projects; Teacher Role; Teacher Student Relationship; Teaching Methods; *Young Children
Identifiers: *Project Approach (Katz and Chard); Task Engagement

ED399066 PS024500

Children as Learners: A Developmental Approach.

Katz, Lilian G.

Jul 1996

15p.; Keynote Address presented at the Conference on Collaborative Teaching and Learning in the Early Years Curriculum (11th, Melbourne, Victoria, Australia, July 11-13, 1996).

EDRS Price - MF01/PC01 Plus Postage.

Document Type: POSITION PAPER (120); CONFERENCE PAPER (150)

Geographic Source: U.S.; Illinois

Journal Announcement: RIEJAN97

This paper outlines 22 principles of practice that serve as criteria by which to judge the developmental appropriateness of an early childhood curriculum. The principles lead to the assertion that young children as learners are greatly supported when a "project approach" is used--e.g., when their early childhood education experience includes opportunities for investigations of phenomena in their environments. Criteria of appropriateness of curricula and pedagogy are discussed, along with explanations of the developmental approach to curricula and teaching practices. The 22 principles of a project or developmental approach include: (1) taking into account those aspects of learning that change with the age and experience of the learner; (2) taking into account two equally important dimensions of development--normative and dynamic; and (3) children's dispositions to be interested, engaged, absorbed, and involved in intellectual effort are strengthened when they have ample opportunity to work on a topic or investigations over a period of time. (BGC)

Descriptors: Child Development; Cognitive Style; Cooperation; Curriculum; *Curriculum Design; *Curriculum Development; Early Childhood Education; Educational Environment; Foreign Countries; Learning Processes; Learning Strategies; *Learning Theories; *Teaching Methods

Identifiers: Developmentally Appropriate Programs; *Developmental Theory; *Project Approach (Katz and Chard)

ED394744 PS024310

Teaching Young Children about Native Americans. ERIC Digest.

Reese, Debbie

ERIC Clearinghouse on Elementary and Early Childhood Education, Urbana, Ill.

May 1996

3p.

Sponsoring Agency: Office of Educational Research and Improvement (ED), Washington, DC.

Contract No: RR93002007

Report No: EDO-PS-96-3

EDRS Price - MF01/PC01 Plus Postage.

Document Type: INSTRUCTIONAL MATERIAL (051); ERIC PRODUCT (071); ERIC DIGESTS (SELECTED) (073)

Geographic Source: U.S.; Illinois

Journal Announcement: RIESEP96

Target Audience: Teachers; Practitioners

Noting that the terms "Native American" and "American Indian" are both legitimately used to refer to the indigenous people of North America, this digest identifies stereotypes about Native Americans that children gain from media portrayals and classroom role playing, and suggests strategies for teachers to use to counter stereotyped portrayals and to reflect cultural diversity among Native Americans. Stereotypes are perpetuated by television, movies, and children's literature when these media depict Native Americans as uncivilized savages or as romanticized heroes. Many teaching materials and children's books present a generalized image of Native American people with little regard for differences among tribes. In their classrooms, teachers can use specific positive strategies to counter these stereotypes and generalized images. Suggested strategies are to: (1) provide knowledge about contemporary Native Americans; (2) prepare units about specific tribes; (3) use books that show contemporary children of all cultures engaged in their usual daily activities; (4) obtain posters that show Native American children in contemporary contexts; (5) use dolls with different skin colors in the dramatic play area; (6) cook ethnic foods; (7) be specific about which tribes use particular items when discussing cultural artifacts; (8) critique a Thanksgiving poster depicting stereotyped pilgrim and Indian figures; and (9) at Thanksgiving, shift the focus away from reenacting the "First Thanksgiving" to items children can be thankful for in their own lives. Besides engaging in these positive practices, teachers can avoid: using over-generalized books and lesson plans; using a "tourist curriculum" that teaches predominantly through celebrations and holidays; presenting sacred activities in trivial ways; and introducing the topic of Native Americans on Columbus Day or at Thanksgiving. (BC)

Descriptors: *American Indian Culture; American Indian History; *American Indians; Books; *Childrens Literature; Classroom Techniques; Cultural Awareness; Curriculum Development; Early Childhood Education; *Learning Strategies; Preschool Curriculum; Preschool Teachers; *Stereotypes; Tribes; Young Children

Identifiers: ERIC Digests; *Native Americans; Project Approach (Katz and Chard); Thanksgiving

ED393608 PS024196

The Contribution of Documentation to the Quality of Early Childhood Education. ERIC Digest.

Katz, Lilian G.; Chard, Sylvia C.

ERIC Clearinghouse on Elementary and Early Childhood Education, Urbana, Ill.

Apr 1996

3p.

Sponsoring Agency: Office of Educational Research and Improvement (ED), Washington, DC.

Contract No: RR93002007

Report No: EDO-PS-96-2
EDRS Price - MF01/PC01 Plus Postage.
Document Type: ERIC PRODUCT (071); ERIC DIGESTS (SELECTED) (073)
Geographic Source: U.S.; Illinois
Journal Announcement: RIEAUG96

Documentation, in the forms of observation of children and record keeping, has long been practiced in many early childhood programs, particularly in the preschools of Reggio Emilia, Italy. Documentation typically includes samples of children's work at several stages of completion; photographs showing work in progress; comments by teachers working with the children; transcriptions of children's discussions; and parents' comments. High-quality documentation of children's work contributes to the quality of early childhood programs in at least six ways. First, documentation enhances children's learning. The processes of preparing and displaying documentaries of children's efforts provides a kind of re-visiting of experience during which new understandings are clarified and strengthened. Second, careful and attractive documentary displays convey to children that their efforts are taken seriously. Third, documentation encourages continuous teacher planning and evaluation of work with children. When teachers and children plan together, activities are likely to be undertaken with greater interest and representational skill than when children plan alone or when teachers are unaware of challenges facing the children. Fourth, documentation fosters parent appreciation and participation. Through learning about the work in which their children are engaged, parents may contribute ideas for activities to teachers and their own time in the classroom. Fifth, teacher research and process awareness is fostered by documentation. As teachers examine and document children's work, their understanding of children's development is deepened in ways not likely to occur from inspecting test results. Sixth, children's learning is made visible through documentation, which provides information about children's progress that cannot be obtained from standardized tests. When children are engaged in absorbing and complex projects, documentation can make a contribution in these six ways. (BC)

Descriptors: Classroom Techniques; Early Childhood Education; Parent Participation; *Portfolio Assessment; Preschool Children; *Student Projects; *Teacher Student Relationship

Identifiers: *Project Approach (Katz and Chard); Reggio Emilia Approach

ED392513 PS023527

Will a Project Approach to Learning Provide Children Opportunities To Do Purposeful Reading and Writing, as Well as Provide Opportunities for Authentic Learning in Other Curriculum Areas?

Bryson, Eileen
[1994]
21p.
EDRS Price - MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)
Geographic Source: U.S.; Alaska
Journal Announcement: RIEJUL96

The project approach to learning includes a focus on in-depth study of a topic, along with teaching style, learning style, and theme. In contrast to a thematic approach, the project approach encourages children to be actively engaged in their own studies, with teachers acting as guides and facilitators. In the project approach, students use subject matter areas as tools in their chosen investigations. Katz and Chard's "Engaging Children's Minds: The Project Approach" is drawn upon as a starting point for this case study. First grade students were involved in two units: (1) a thematic unit involving dinosaurs; and (2) a project-based unit about frogs. Comparisons were made between the two experiences. Particular attention was given to children's enthusiasm for the work; the reading, writing, and learning in other curriculum areas; and analysis of differences in the two learning approaches. The results showed that children exhibited greater enthusiasm for the collaborative work in the project approach than in the thematic unit. Children were also more involved in reading and research in the frog project than the dinosaur unit, and made many more decisions about their own learning. Children who use these skills in meaningful, project-based situations maintain positive outlooks toward learning, effecting learning in later years. Contains 11 references. (BGC)

Descriptors: Case Studies; Communication Skills; Comparative Analysis; Cooperation; *Curriculum Design; Dramatic Play; Early Childhood Education; Integrated Curriculum; Interpersonal Competence; Reading Ability; Reading Skills; *Student Projects; Teaching Methods; *Thematic Approach; Verbal Communication; Writing (Composition); Writing Skills; Young Children

Identifiers: Collaborative Learning; Katz (Lilian G); *Project Approach (Katz and Chard)

ED389583 SE057226

Splitting Reexamined: Results from a Three-Year Longitudinal Study of Children in Grades Three to Five.

Confrey, Jere; Scarano, Grace Hotchkiss

Oct 1995

8p.; Paper presented at the Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (17th, Columbus, OH, October 21-24, 1995). For entire conference proceedings, see SE 057 177.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150)

Geographic Source: U.S.; New York

Journal Announcement: RIEAPR96

This paper is a report on the results of a 3-year teaching experiment conducted in Ithaca, New York, introducing students to the concepts of multiplication, division, and ratio as a trio, and to ratio and proportion in a project-based curriculum with heterogeneous grouping. Fractions were introduced as a subset of ratio and proportion. The paper outlines curricular changes in grades 3-5 and focuses on the major representational forms used by the students including: Venn diagrams, daisy chains, contingency tables, tables of values, dot drawings, two-dimensional graphs, and ratio boxes. Also discussed is the role these tools play in the development of students' understandings of the multiplicative world. Results

show that these 10- and 11-year-olds exceeded the comparative performance of 14- and 15-year-olds on ratio and proportion test items. Contains 14 references. (Author/MKR)

Descriptors: *Concept Formation; *Division; Elementary Education; Grade 3; Grade 4; Grade 5; Longitudinal Studies; Mathematics Instruction; *Multiplication; *Ratios (Mathematics)

Identifiers: *Representations (Mathematics)

ED389474 PS023972

Encouraging Creativity in Early Childhood Classrooms. ERIC Digest.

Edwards, Carolyn Pope; Springate, Kay Wright

ERIC Clearinghouse on Elementary and Early Childhood Education, Urbana, Ill.

Dec 1995

3p.

Sponsoring Agency: Office of Educational Research and Improvement (ED), Washington, DC.

Contract No: RR93002007

Report No: EDO-PS-95-14

EDRS Price - MF01/PC01 Plus Postage.

Document Type: TEACHING GUIDE (052); ERIC PRODUCT (071); ERIC DIGESTS (SELECTED) (073)

Geographic Source: U.S.; Illinois

Journal Announcement: RIEAPR96

This digest considers teacher- and child-initiated strategies for enhancing young children's self-expression and creativity. When teachers think about art and creative activities for children, it is important for them to consider that young children: (1) are developmentally capable of classroom experiences which call for (and practice) higher level thinking skills, including analysis, synthesis, and evaluation; (2) need to express ideas through different expressive avenues and symbolic media; (3) learn through meaningful activities in which different subject areas are integrated; and (4) benefit from in-depth exploration and long-term projects. Given what is known about young children's learning and their competence to express their visions of themselves, classrooms and classroom activities can be modified in several ways to support children's emerging creativity. First, class schedules should provide children with unhurried time to explore. Children should not be artificially rotated from one activity to another. Second, children's work spaces should inspire them. Children's work is fostered by a space that has natural light, harmonious colors, and comfortable work areas. Third, teachers can provide children with wonderful collections of resource materials that might be bought, found, or recycled. Fourth, the classroom atmosphere should reflect the adults' encouragement and acceptance of mistakes, risk-taking, innovation, and uniqueness, along with a certain amount of mess, noise, and freedom. In order to create such a climate, teachers must give themselves permission to try artistic activity. Finally, teachers can provide occasions for intense encounters between children and their inner or outer world. Children's best work involves such encounters. (BC)

Descriptors: Art Materials; Class Activities; Classroom Environment; Classroom Techniques; Creative Activities; *Creative Development; *Creative Expression; *Creativity; Early Childhood Education; Teacher Student Relationship; *Young Children

Identifiers: ERIC Digests; Project Approach (Katz and Chard); Reggio Emilia Approach

ED381264 PS023164

Early Childhood Education and Beyond: Can We Adapt the Practices and Philosophies from the Preschools of Reggio Emilia, Italy into Our Elementary Schools in America?

Firlik, Russ

Mar 1995

14p.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: POSITION PAPER (120)

Geographic Source: U.S.; New York

Journal Announcement: RIEAUG95

The model presented by the preschools in Reggio Emilia, Italy, is one of cooperation and collaborations among teachers, parents, and children; curriculum based on the "project approach," and constructivist learning philosophy, which states that children construct their knowledge and values as a result of interactions with and action on the physical and social world. American early childhood educators and researchers have expressed notable interest in the Reggio Emilia programs; however differences in the American and European thinking attitudes within a macro society, and cultural conventions make adapting or transporting methods with European roots difficult at best. An example of differences in thinking would be the way Americans have discarded European traditions of evaluating ideas and systems of thought according to "intellectual consistency" or aesthetic appeal. Cultural differences include: individualism versus collectivism; the American emphasis on "equalitarianism"; forms of activity of doing rather than being; the separation of work and play; and the dichotomy between competition and affiliation. Several elements need to be in place in American schools before any successful transitions from preschool to elementary school can take place, including preparation of children for such transitions, involvement of parents in each step of the process, and continuity of program through developmentally diverse and age/individual appropriate curricula. Although the Reggio Emilia schools do not have administrators or head teachers, their programs support the administrator's practical role in promoting development. Administrators must promote teachers and children to be curriculum makers; invite parents to be part of the classroom; allow time for observing the project process; allow planning time for teachers; and encourage and support practitioners by giving them time to develop. Contains nine references. (HTH)

Descriptors: Administrator Role; Comparative Analysis; Constructivism (Learning); *Cultural Differences; Educational Attitudes; Elementary Education; Parent Participation; Preschool Education; School Readiness; *Teaching Methods

Identifiers: Developmentally Appropriate Programs; Project Approach (Katz and Chard); *Reggio Emilia Approach

ED380238 PS023152

El Metodo Llamado Proyecto (The Project Approach). ERIC Digest.

Katz, Lilian G.

ERIC Clearinghouse on Elementary and Early Childhood Education, Urbana, Ill.

Dec 1994

3p.; Spanish translation of ED 368 509.

Sponsoring Agency: Office of Educational Research and Improvement (ED), Washington, DC.

Contract No: RR93002007

Report No: EDO-PS-94-16

EDRS Price - MF01/PC01 Plus Postage.

Language: Spanish

Document Type: ERIC PRODUCT (071); ERIC DIGESTS (SELECTED) (073)

Geographic Source: U.S.; Illinois

Journal Announcement: RIEJUL95

A project is an in-depth investigation of a topic worth learning more about, usually undertaken by a group of children within a class. The goal of a project is to learn more about a topic rather than to find answers to questions posed by a teacher. Project work is complementary to the systematic parts of a curriculum. Whereas systematic instruction helps children acquire skills, addresses children's deficiencies, and stresses extrinsic motivation, project work provides opportunities to apply skills, addresses children's proficiencies, and stresses intrinsic motivation. Projects differ from themes, which are broad topics such as "seasons," and units, which consist of preplanned lessons and activities on particular topics. In themes and units, children usually have little role in specifying the questions to be answered as the work proceeds. This is not the case in projects. Activities engaged in during project work include drawing, writing, reading, recording observations, and interviewing experts. Projects can be implemented in three stages. In Phase 1, "Getting Started," the teacher and children select and refine the topic to be studied. Phase 2, "Field Work," consists of investigating, drawing, constructing models, recording, and exploring. Phase 3, "Culminating and Debriefing Events," includes preparing and presenting reports of results. These characteristics of projects are exemplified in a project in which kindergartners collected 31 different types of balls. After collecting the balls, the class examined various characteristics of the balls, such as shape, surface texture, circumference, composition, weight, resistance, and use. This project involved children in a variety of tasks and gave children the opportunity to learn a new vocabulary as their knowledge of a familiar object deepened. (BC)

Descriptors: Activity Units; *Curriculum Development; Early Childhood Education; Elementary Education; *Group Activities; *Learning Activities; Student Motivation; *Student Participation; *Teacher Student Relationship; Thematic Approach

Identifiers: ERIC Digests; *Project Approach (Katz and Chard)

ED376991 PS022936

Integrate, Don't Isolate Computers in the Early Childhood Curriculum. ERIC Digest.

Davis, Bernadette Caruso; Shade, Daniel D.

ERIC Clearinghouse on Elementary and Early Childhood Education, Urbana, Ill.

Dec 1994

3p.

Sponsoring Agency: Office of Educational Research and Improvement (ED), Washington, DC.

Contract No: DERR93002007

Report No: EDO-PS-94-17

EDRS Price - MF01/PC01 Plus Postage.

Document Type: NON-CLASSROOM MATERIAL (055); ERIC PRODUCT (071); ERIC DIGESTS (SELECTED) (073)

Geographic Source: U.S.; Illinois

Journal Announcement: RIEAPR95

When computers are relegated to a single room in a school where children use them only occasionally, their potential impact on children's learning is minimized. When computers are integrated into the curriculum and are applied to real problems, however, children gain the ability to use computers as natural tools for learning. For example, when a teacher chooses a topic for an integrated study project, the class will define relevant concepts related to that topic and choose activities to explore those concepts. Sometimes computers will be the most appropriate tool for exploring the concepts. As they work on their project, children can use computer programs to construct stories with pictures, labels, and voice recordings; gather information from CD-ROM encyclopedias; compose and illustrate stories; and write letters to experts. Children can also use microworlds, or programs that help them discover concepts and cause-effect relationships, and serve as a bridge between hands-on experience and abstract learning. Teachers help children learn in computer-enriched classrooms by filling several roles. Initially, teachers serve as instructors to children in the use of computers. Later, as children gain more experience, the teacher's role moves to that of a coach. By using computers themselves, teachers can also serve as models to children Finally, teachers must be critics of computer software, learning to select the best software to enhance children's development. In all cases, teachers must remember that without proper integration of computers into the curriculum, the benefits of technology to children's learning cannot be fully achieved. Contains 12 references. (BC)

Descriptors: Class Activities; Computer Assisted Instruction; *Computers; Computer Software; *Computer Uses in Education; Early Childhood Education; *Integrated Activities; *Integrated Curriculum; *Learning Activities; Microworlds; *Teacher Role; Teacher Student Relationship

Identifiers: ERIC Digests; Project Approach (Katz and Chard)

ED375986 PS022934

Reflections on the Reggio Emilia Approach. Perspectives from ERIC/EECE: A Monograph Series No. 6.

Katz, Lilian G., Ed.; Cesarone, Bernard, Ed.

ERIC Clearinghouse on Elementary and Early Childhood Education, Urbana, Ill.

Dec 1994

135p.

Sponsoring Agency: Office of Educational Research and Improvement (ED), Washington, DC.

Contract No: RR93002007

Available From: ERIC Clearinghouse on Elementary and Early Childhood Education, 805 West Pennsylvania Avenue, Urbana, IL 61801-4897 (Catalog No. 215, $10, plus $1.50 shipping and handling).

EDRS Price - MF01/PC06 Plus Postage.

Document Type: BOOK (010); PROJECT DESCRIPTION (141); ERIC PRODUCT (071)

Geographic Source: U.S.; Illinois

Journal Announcement: RIEMAR95

This monograph consists of seven papers that discuss issues related to the teaching approach used in the preschools of Reggio Emilia, Italy. The papers are: (1) "Images from the World: Study Seminar on the Experience of the Municipal Infant-Toddler Centers and the Preprimary Schools of Reggio Emilia, Italy" (Lilian G. Katz), which identifies problems that warrant consideration by American educators trying to adapt the Reggio Emilia approach to schools in the United States; (2) "Images from the United States: Using Ideas from the Reggio Emilia Experience with American Educators" (Brenda Fyfe), which shares insights of teachers in the St. Louis, Missouri, area as they implement the Reggio Emilia approach in their classrooms; (3) "Reggio Emilia: Its Visions and Its Challenges for Educators in the United States" (Rebecca New), which notes the similarities and differences in the way teachers in Italy and the United States perform their daily work; (4) "Different Media, Different Languages" (George Forman), which explains the role of graphic "languages" in children's learning; (5) "Staff Development in Reggio Emilia" (Carlina Rinaldi), which explains the Reggio Emilia schools' unique approach to staff development; (6) "An Integrated Art Approach in a Preschool" (Giordana Rabitti), which details a case study of a children's project conducted in one of the preprimary schools in Reggio Emilia; and (7) "Promoting Collaborative Learning in the Early Childhood Classroom: Teachers' Contrasting Conceputalizations in Two Communities" (Carolyn Edwards, Lella Gandini, and John Nimmo), which examines the beliefs of teachers in Italy and the United States about their roles and about the nature of children as learners. A reference list is appended to some of the papers. The monograph also contains a bibliography of 22 items on the Reggio Emilia approach selected from the ERIC database, and a list of additional resources on the Reggio Emilia approach. (BC)

Descriptors: Annotated Bibliographies; *Art Activities; *Cultural Differences; Foreign Countries; Freehand Drawing; Infants; Preschool Children; *Preschool Education; Preschool Teachers; *Program Implementation; Staff Development; Teacher Attitudes; *Teaching Methods; Toddlers

Identifiers: Collaborative Learning; Italy; Program Adaptation; *Project Approach (Katz and Chard); *Reggio Emilia Approach; United States

ED368509 PS022331

The Project Approach. ERIC Digest.

Katz, Lilian G.

ERIC Clearinghouse on Elementary and Early Childhood Education, Urbana, Ill.

Apr 1994

3p.

Sponsoring Agency: Office of Educational Research and Improvement (ED), Washington, DC.

Contract No: RR93002007

Report No: EDO-PS-94-6

EDRS Price - MF01/PC01 Plus Postage.

Document Type: ERIC PRODUCT (071); ERIC DIGESTS (SELECTED) (073)

Geographic Source: U.S.; District of Columbia

Journal Announcement: RIEAUG94

A project is an in-depth investigation of a topic worth learning more about, usually undertaken by a group of children within a class. The goal of a project is to learn more about a topic rather than to find answers to questions posed by a teacher. Project work is complementary to the systematic parts of a curriculum. Whereas systematic instruction helps children acquire skills, addresses children's deficiencies, and stresses extrinsic motivation, project work provides opportunities to apply skills, addresses children's proficiencies, and stresses intrinsic motivation. Projects differ from themes, which are broad topics such as "seasons," and units, which consist of preplanned lessons and activities on particular topics. In themes and units, children usually have little role in specifying the questions to be answered as the work proceeds. This is not the case in projects. Activities engaged in during project work include drawing, writing, reading, recording observations, and interviewing experts. Projects can be implemented in three stages. In Phase 1, "Getting Started," the teacher and children select and refine the topic to be studied. Phase 2, "Field Work," consists of investigating, drawing, constructing models, recording, and exploring. Phase 3, "Culminating and Debriefing Events," includes preparing and presenting reports of results. These characteristics of projects are exemplified in a project in which kindergartners collected 31 different types of balls. After collecting the balls, the class examined various characteristics of the balls, such as shape, surface texture, circumference, composition, weight, resistance, and use. This project involved children in a variety of tasks and gave children the opportunity to learn a new vocabulary as their knowledge of a familiar object deepened. (BC)

Descriptors: Activity Units; *Curriculum Development; Early Childhood Education; Elementary Education; *Group Activities; *Learning Activities; Student Motivation; *Student Participation; *Teacher Student Relationship; Thematic Approach

Identifiers: ERIC Digests; *Project Approach (Katz and Chard)

ED358921 PS021374

Early Childhood Curriculum Resource Handbook. A Practical Guide for Teaching Early Childhood (Pre-K-3).

Hendrick, Joanne, Ed.; And Others

1993

420p.; Part of a series of teacher resource handbooks.

ISBN: 0-527-20809-4

Available From: Kraus International Publications, 358 Saw Mill River Road, Millwood, NY 10546-1035 ($19.95).

Document Not Available from EDRS.

Document Type: NON-CLASSROOM MATERIAL (055)

Geographic Source: U.S.; New York

Journal Announcement: RIENOV93

Target Audience: Teachers; Administrators; Practitioners

This guide provides curriculum developers, education faculty, veteran teachers, and student teachers with basic information on the background of early childhood curriculum, as well as current information on publications, standards, and special materials for early childhood classrooms. Following an introduction, the material is presented in 14 chapters by different contributors. Chapter 1 discusses the history and development of present-day curriculum and the directions it is taking. Chapter 2 is a practical guide to creating or revising an early childhood curriculum. Funding sources for curriculum projects are listed in chapter 3, and chapter 4 outlines the content of integrated early childhood education. Chapter 5 describes state guidelines for early childhood education, and chapter 6 lists department of education addresses and publication titles for each state. Classroom assessment is the focus of chapter 7, and chapter 8 consists of annotated lists of curriculum guides for prekindergarten through grade three. Chapter 9 discusses the project approach in early childhood curriculum. Chapter 10 covers trade books, and chapter 11 lists sources of textbooks, software, videos, and other curriculum materials. Chapter 12 lists textbooks and materials adopted by New Mexico and West Virginia, two states with policies specific to the adoption of textbooks in early childhood education. Chapter 13 provides an index to reviews of early childhood textbooks and supplementary materials. Chapter 14 lists subscribers of the Kraus Development Library, a source of curriculum guides in early childhood education. A reference list is provided with some of the chapters. The appendix reprints sections of two exemplary curriculum guides. (TJQ)

Descriptors: *Curriculum Development; *Curriculum Guides; *Early Childhood Education; Financial Support; *Instructional Development; *Instructional Materials; Integrated Curriculum; Media Selection; Reading Material Selection; *Resource Materials; State Curriculum Guides; State Departments of Education; Student Evaluation; Textbook Selection

Identifiers: Project Approach (Katz and Chard); State Level Textbook Adoption

ED340518 PS020272

The Project Approach.

Katz, Lilian G.; Chard, Sylvia D.

Feb 1992

27p.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: TEACHING GUIDE (052); EVALUATIVE REPORT (142)

Geographic Source: U.S.; Illinois

Journal Announcement: RIEMAY92

This document proposes the project approach as one element of early childhood education that can function in a complementary relationship to other aspects of the early childhood curriculum. The term "project" is defined as an extended investigation of a topic that is of interest to participating children and judged worthy of attention by their teachers. Projects involve the application of a variety of intellectual, academic, and social skills and competencies. The project approach builds self-confidence, encourages creativity and other dispositions, and offers opportunities for children and parents to work closely together in support of the school program. The theoretical rationale for the project approach is based both on a specific view of the main goals of education and on a developmental approach to implementing those goals. The goals are: (1) the construction and acquisition of worthwhile knowledge; (2) the development of a wide variety of basic intellectual and social skills; (3) the strengthening of desirable dispositions; and (4) the engendering of positive feelings in children about themselves as learners and as participants in group endeavors. Each of these goals is defined, and the principles of practice they imply are then discussed in terms of what is understood about young children's development and learning. Guidelines for implementing project work are provided and a model of a specific project is presented. (SH)

Descriptors: *Curriculum Design; Early Childhood Education; *Educational Principles; *Educational Theories; Experiential Learning; Instructional Innovation; Integrated Curriculum; Learning Activities; Skill Development; *Student Projects; Teacher Role; *Teaching Methods; *Thematic Approach

Identifiers: *Project Approach (Katz and Chard)

ED304208 PS017796

"What You Give Is What You Get."

Lee, Marjorie W.; And Others

12 Nov 1988

26p.; Paper presented at the Annual Meeting of the National Association for the Education of Young Children (Anaheim, CA, November 12, 1988).

Sponsoring Agency: Howard Univ., Washington, D.C.

EDRS Price - MF01/PC02 Plus Postage.

Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150)

Geographic Source: U.S.; District of Columbia

Journal Announcement: RIEJUL89

In its three parts, this presentation: (1) describes five aspects of James Coleman's concept of "social capital"; (2) describes how the concept of social capital was used to develop a questionnaire for assessing teachers' investment of emotional self (personality, warmth, enthusiasm, etc.) in caregiving; and (3) provides related information about aspects of a research project based on the conceptualization and use of the questionnaire. Defined are five components of teachers' social capital: attention, personal interest, intensity of involvement, intimacy or closeness, and persistence or continuity over time. These characteristics are seen as lying at the core of successful developmental education programs for young children. The questionnaire was designed to answer the questions: (1) To what extent do early childhood teachers report investment of social capital with each student? (2) Are self-reported information and observational data consistent for 20 percent of the

subjects? Each component of social capital was delineated in terms of Child Development Associate (CDA) functional areas. The questionnaire was field-tested in two metropolitan areas. The concluding portion of the presentation includes a brief overview of the literature on social capital; discusses results of efforts to establish the instrument's reliability and validity; and depicts expected outcomes of the project. (RH)

Descriptors: *Child Caregivers; *Classification; *Competency Based Teacher Education; Content Validity; Early Childhood Education; *Intimacy; Questionnaires; Reliability; Teacher Evaluation; *Teacher Student Relationship; *Test Construction

Identifiers: Child Development Associate; *Social Capital

ED279407 PS016344

Early Education: What Should Young Children Be Doing?

Katz, Lilian G.

1987

22p.

EDRS Price - MF01/PC01 Plus Postage.

Document Type: POSITION PAPER (120); REVIEW LITERATURE (070)

Geographic Source: U.S.; Illinois

Journal Announcement: RIEJUL87

Contrasting academic and intellectual approaches to preschool programs, this review of current research and discussion of implications for improving educational practices, identifies conditions of children's environments that facilitate their development. The review centers on risks related to pressuring young children to acquire academic concepts and skills, including the possibility that early academic pressure may undermine the development of dispositions (i.e., characteristic ways of responding to experience across types of situations) to use acquired skills, may result in the use of a single teaching method and curriculum, and may increase children's feelings of incompetence. It is pointed out that the implementation of a "pushed down" elementary school curriculum reduces young children's opportunities to become engaged in interactive processes, processes known to be important for learning among young children. As an alternative to the academic approach, an interactive context for early learning is discussed in terms of the development of communicative competence, of the disposition to become deeply interested in an activity or concern, and of social competence guided, as needed, by teachers with specialized training in helping young children maximize the educative potential of interaction. The discussion of implications for preschool programs centers on the value of an intellectually oriented, project-based curriculum which strengthens children's dispositions to observe, experiment, inquire, and reconstruct aspects of their environment. (RH)

Descriptors: Early Childhood Education; *Educational Malpractice; *Educational Objectives; Educational Practices; *Intellectual Experience; Interpersonal Competence; Learning; *Preschool Curriculum; *Social Development; *Student Projects; Teacher Role; Teaching Methods; Young Children

Identifiers: Academic Stress; *Dispositions (Psychology)

ED229944 EC151953

Family, Infant, and Toddler (FIT) Guide. A Model for Rural Family-Implemented Educational Programs.

Carr, Ann B., Ed.; And Others

George Peabody Coll. for Teachers, Nashville Tenn. John F. Kennedy Center for Research on Education and Human Development.

Jun 1982

154p.

EDRS Price - MF01/PC07 Plus Postage.

Document Type: PROJECT DESCRIPTION (141)

Geographic Source: U.S.; Tennessee

Journal Announcement: RIEOCT83

The manual describes the Family, Infant, and Toddler Project for rural handicapped preschoolers and their families. The project, based on an ecological perspective, has three goals: to develop a demonstration service program, to increase the pool of qualified personnel, and to expand educational services to preschool aged mentally retarded children and their families in rural areas. Techniques used in establishing the program in rural communities are described. Referral, screening, and evaluation procedures (which include psychological and educational evaluation as well as family interviews) are described. The operation and design of the rural educational clinic are summarized in terms of facilities, staffing patterns, scheduling, liaison, program planning for families, and record keeping. Extensive appendixes include sample letters and forms, sample screening and evaluation reports, and parent interview sum...aries. (CL)

Descriptors: Clinics; *Demonstration Programs; *Disabilities; Parent Education; Preschool Education; Program Descriptions; *Program Development; *Rural Areas; Screening Tests; Student Evaluation

Identifiers: *Family Infant and Toddler Project

Journal Articles

EJ554424 PS527241

The Project Approach in Inclusive Preschool Classrooms.

Greenwald, Carol; Hand, Jennifer

Dimensions of Early Childhood, v25 n4 p35-39 Fall 1997

ISSN: 1068-6177

Document Type: JOURNAL ARTICLE (080); PROJECT DESCRIPTION (141)

Journal Announcement: CIJAPR98

Describes a program for a project approach in inclusive classrooms which balances the needs of children with and without developmental delays and provides effective and efficient learning. Provides guidance in choosing the project topic, introducing ideas, implementing project activities, completing the project, and evaluating the experience. (SD)

Descriptors: Child Development; *Class Activities; Developmental Delays; Developmental Disabilities; Disabilities; *Inclusive Schools; Mainstreaming; Normalization

(Disabilities); *Preschool Education; *Regular and Special Education Relationship; Special Education; Special Needs Students; *Student Projects

Identifiers: *Project Approach (Katz and Chard)

EJ547961 PS526717

The Fiber Project: One Teacher's Adventure toward Emergent Curriculum.

Booth, Cleta

Young Children, v52 n5 p79-85 Jul 1997

ISSN: 0044-0728

Document Type: JOURNAL ARTICLE (080); PROJECT DESCRIPTION (141)

Journal Announcement: CIJDEC97

Describes a preschool classroom project intended to explore cotton and wool production. Describes the planning process, project implementation and evaluation, collaboration with other teachers, additional fiber-related center activities, and how the project provided opportunities for work in many curriculum areas. The fabric project concluded with the creation of a class quilt. (KB)

Descriptors: Class Activities; Learning Activities; *Personal Narratives; Preschool Curriculum; Preschool Education

Identifiers: Cotton Production; *Emergent Curriculum; *Project Approach (Katz and Chard); Textile Fibers; Webbing (Thematic); Wool

EJ538098 PS525986

A Multicultural Family Project for Primary.

Gutwirth, Valerie

Young Children, v52 n2 p72-78 Jan 1997

ISSN: 0044-0728

Document Type: PROJECT DESCRIPTION (141); JOURNAL ARTICLE (080)

Journal Announcement: CIJJUN97

Suggests that teachers can work with children's families to study likenesses and differences in their respective cultures. Details a class project for 7- to 8-year-olds whereby children start with self-portraits and construct masks of their faces. Provides sample mask project timeline and steps for making masks out of paper molds and a shredded-paper-and-glue medium. (AMC)

Descriptors: *Art Activities; Art Expression; Art Materials; *Childrens Art; Classroom Techniques; *Cultural Awareness; *Cultural Differences; Early Childhood Education; Elementary School Students; Family Characteristics; *Multicultural Education; *Parent Teacher Cooperation; Teaching Methods

Identifiers: *Family Activities; Project Approach (Katz and Chard)

EJ533095 PS525779

To Build a House: Designing Curriculum for Primary-Grade Children.

Harris, Teresa T.; Fuqua, J. Diane

Young Children, v52 n1 p77-83 Nov 1996
ISSN: 0044-0728
Document Type: TEACHING GUIDE (052); JOURNAL ARTICLE (080)
Journal Announcement: CIJMAR97

Presents a social studies unit on house building for 5- to 7-year olds. Discusses rationale for the project approach and outlines unit components. Describes the three components of the curriculum planning strategy: (1) impression activities; (2) extension activities; and (3) expression activities. Discusses experiences during unit implementation and assessment through observation of children's behaviors and products. (KDFB)

Descriptors: Childrens Literature; Class Activities; Curriculum Development; Elementary School Curriculum; *Housing; Housing Industry; Observation; Primary Education; Program Evaluation; Self Expression; *Social Studies; Units of Study; *Young Children

Identifiers: Anecdotal Records; Project Approach (Katz and Chard); Representational Thinking; Symbolic Thinking

EJ533090 PS525774
Teaching All Children: Four Developmentally Appropriate Curricular and Instructional Strategies in Primary-Grade Classrooms.
Burchfield, David W.
Young Children, v52 n1 p4-10 Nov 1996
ISSN: 0044-0728
Document Type: PROJECT DESCRIPTION (141); JOURNAL ARTICLE (080)
Journal Announcement: CIJMAR97

Describes four child-focused and child-sensitive curricular and instructional strategies to increase teachers' understanding of children and quality of teaching: (1) multiple intelligences and different ways of knowing; (2) the Project Approach; (3) the writer's workshop; and (4) balancing reading strategies and cueing systems. Discusses strengths, unique features, and application of each approach. (KDFB)

Descriptors: Classroom Techniques; *Educational Strategies; Elementary School Curriculum; Primary Education; Reading Instruction; *Student Centered Curriculum; Student Projects; Writing Workshops; *Young Children

Identifiers: Child Centered Education; *Developmentally Appropriate Programs; Diversity (Student); Gardner (Howard); Heterogeneous Classrooms; Multiple Intelligences; Project Approach (Katz and Chard)

EJ533030 PS525650
Learning about Moths.
Albrecht, Kay; Walsh, Katherine
Texas Child Care, v20 n2 p32-37 Fall 1996
ISSN: 1049-9466
Document Type: PROJECT DESCRIPTION (141); JOURNAL ARTICLE (080)
Journal Announcement: CIJMAR97

Describes an early childhood classroom project involving moths that teaches children about moths' development from egg to adult stage. Includes information about the moth's enemies, care, and feeding. Outlines reading, art, music and movement, science, and math activities centering around moths. (BGC)

Descriptors: Art Activities; Class Activities; Discovery Learning; Discovery Processes; Early Childhood Education; Handicrafts; Integrated Curriculum; *Learning Activities; Mathematics Achievement; Mathematics Skills; Movement Education; Music Activities; *Outdoor Education; Puppetry; Science Activities; Sciences; Young Children

Identifiers: *Nature; Project Approach (Katz and Chard)

EJ528148 PS525237

Can We Adapt the Philosophies and Practices of Reggio Emilia, Italy, for Use in American Schools?

Firlik, Russell

Early Childhood Education Journal, v23 n4 p217-20 Sum 1996

ISSN: 1082-3301

Available From: UMI

Document Type: POSITION PAPER (120); JOURNAL ARTICLE (080)

Journal Announcement: CIJDEC96

Describes the Reggio Emilia (Italy) model for preschool education. Addresses the perceived difficulties of transferring the program to U.S. schools, focusing on differences in patterns of thinking, educational attitudes, and cultural conventions between the two cultures. Provides perspectives for change and adaptation. (SD)

Descriptors: Class Activities; *Classroom Environment; Classroom Techniques; Constructivism (Learning); *Cultural Differences; Early Childhood Education; *Educational Change; Educational Innovation; *Educational Philosophy; Foreign Countries; Learning Processes; Learning Theories; Nontraditional Education; Play; Student Centered Curriculum; Student Projects; *Teaching Methods; Young Children

Identifiers: Child Centered Education; Dewey (John); Gardner (Howard); Holistic Education; *Italy (Reggio Emilia); Learning Environment; Multiple Intelligences; Project Approach (Katz and Chard); *Reggio Emilia Approach; Social Constructivism; Social Learning Theory; Thorndike (Edward L); Whole Child Approach

EJ523472 PS524970

Lilian Katz on the Project Approach.

Scholastic Early Childhood Today, v10 n6 p20-21 Mar 1996

ISSN: 1070-1214

Document Type: POSITION PAPER (120); JOURNAL ARTICLE (080)

Journal Announcement: CIJSEP96

Interview with Lilian Katz, one of the foremost authorities on the project approach to learning. Discusses the misconceptions and advantages of the project approach, the teacher's role in project-based work, and the qualities teachers need to insure its success. Gives

historical background on the development of the approach, and some common stumbling blocks to its successful implementation. (TJQ)

Descriptors: *Active Learning; *Discovery Learning; Early Childhood Education; Educational Trends; *Experiential Learning; Interviews; *Learning Activities; *Student Projects; Teacher Role

Identifiers: *Project Approach (Katz and Chard)

EJ523471 PS524969

Learning through Projects.

Borgia, Eileen

Scholastic Early Childhood Today, v10 n6 p22-29 Mar 1996

ISSN: 1070-1214

Document Type: TEACHING GUIDE (052); JOURNAL ARTICLE (080)

Journal Announcement: CIJSEP96

Offers guidelines for creating and implementing an age-appropriate project that fits children's needs, interests, and surroundings. Using the example of a supermarket project, outlines the four stages of a project's development--preliminary planning, getting started, investigation and discovery, and wrapping up the project. Gives tips on learning goals, topic selection, involving families, and using documentation. (TJQ)

Descriptors: *Active Learning; *Discovery Learning; Early Childhood Education; *Experiential Learning; Family Involvement; Field Trips; *Learning Activities; Parent Participation; *Student Projects

Identifiers: Age Appropriateness; *Project Approach (Katz and Chard)

EJ516731 PS524341

The Project Approach: A Museum Exhibit Created by Kindergartners.

Diffily, Deborah

Young Children, v51 n2 p72-75 Jan 1996

ISSN: 0044-0728

Available From: UMI

Document Type: PROJECT DESCRIPTION (141); JOURNAL ARTICLE (080)

Journal Announcement: CIJMAY96

Describes one kindergarten classroom's experience creating a rock and fossils museum exhibit and the excitement and learning that occurred when the children become directly involved in the project. Using the framework of the project approach, math, science, art, writing, and social studies content areas were involved. (ET)

Descriptors: *Class Activities; *Exhibits; *Experiential Learning; Kindergarten; Kindergarten Children; Primary Education; *Student Participation; *Student Projects; Teaching Methods

Identifiers: Dewey (John); Project Approach (Katz and Chard); Rocks

EJ505502 PS523296

Projects in the Early Years.

Hartman, Jeanette A.; Eckerty, Carolyn

Childhood Education, v71 n3 p141-47 Spr 1995

ISSN: 0009-4056

Available From: UMI

Document Type: TEACHING GUIDE (052); JOURNAL ARTICLE (080)

Journal Announcement: CIJOCT95

Suggests that the growing interest in project work in early childhood education is in response to the call for developmentally appropriate practices. Defines projects and discusses the beginning of a project. Discusses the three phases of the "construction site/house project" by four- and five-year olds and provides responses to frequently asked questions about projects. (DR)

Descriptors: Class Activities; Definitions; Early Childhood Education; *Outcomes of Education; Preschool Children; *Teaching Methods

Identifiers: Developmentally Appropriate Programs; *Project Approach (Katz and Chard)

EJ503734 PS523431

Project Work with Diverse Students: Adapting Curriculum Based on the Reggio Emilia Approach.

Abramson, Shareen; And Others

Childhood Education, v71 n4 p197-202 Sum 1995

ISSN: 0009-4056

Available From: UMI

Document Type: PROJECT DESCRIPTION (141); JOURNAL ARTICLE (080)

Journal Announcement: CIJSEP95

Presents key features of the Reggio Emilia approach and its adaptation to early childhood curriculum in the United States. Discusses using projects as a teaching strategy for diverse students to encourage language and conceptual development. Gives prominence to visual languages. Describes project activities involving student teachers and children. (BAC)

Descriptors: *Curriculum Development; Early Childhood Education; Educational Environment; Educational Innovation; *Instructional Materials; Integrated Curriculum; Language Acquisition; Multicultural Education; *Student Projects; *Teaching Methods; Visual Arts

Identifiers: Culturally Different Students; Italy (Reggio Emilia); *Project Approach (Katz and Chard); *Reggio Emilia Approach

EJ471316 PS520848

What Do Parents Think about Kindergarten?

Karwowska-Struczyk, Malgorzata

International Journal of Early Years Education, v1 n2 p33-44 Fall

1993

Document Type: RESEARCH REPORT (143); JOURNAL ARTICLE (080)

Journal Announcement: CIJFEB94

Describes a study that examined parental involvement in kindergarten in Poland and that is part of an international project based on Bronfenbrenner's theory of the ecology of human development. Details parents' opinions about kindergarten and their expectations of both teachers and the setting in which their child has been placed. (BB)

Descriptors: Curriculum; *Educational Environment; Foreign Countries; *Kindergarten; Kindergarten Children; *Parent Attitudes; *Parent Participation; Parent Responsibility; Parent School Relationship; Parent Teacher Cooperation; Primary Education

Identifiers: *Parent Expectations; *Poland

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ERIC/EECE
University of Illinois
51 Gerty Drive
Champaign, IL 61820-7469
Telephone: 217-333-1386
Fax: 217-333-3767
Email: ericeece@uiuc.edu
Internet: http://ericeece.org/

List of Contributors to
The Project Approach: An Encore Evening of Sharing Knowledge
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November 20, 1998

Sharman Armfield, Teacher
Nancy Thomas, Teacher
Lee Makovichuk, Teacher
Diane Mellott, Teacher
Child Study Centre
University of Alberta
Alberta, Edmonton, Canada T6G 2G5

Pat Bainter, Teacher (pbainter@harlem.winbgo.k12.il.us)
Julie Fogarty, Teacher (jfogarty@harlem.winbgo.k12.il.us)
Marquette School
8500 Victory Lane
Machesney Park, IL 61115
815-654-4503

Eileen T. Borgia, Professor
College of Education
Governors State University
University Park, IL 60466
708-534-5000

Sylvia C. Chard, Associate Professor Early Childhood Education
and Director, Child Study Centre
Department of Elementary Education
University of Alberta
551 Education Building South
Edmonton, Alberta, Canada T6G 2G5
403-492-4273 ext. 236
403-437-7987 (fax)
Sylvia.Chard@ualberta.ca

Cindy Chancy
Southern Illinois University, Edwardsville
CCBZ1@aol.com

Rebecca K. Edmiaston, Ph.D.
Regents' Center for Early Developmental Education
University of Northern Iowa
Cedar Falls, IA 50614-0616
319-273-2101
rebecca.edmiaston@uni.edu

Jane Farish, Teacher (jfarish@stanford.edu)
Mark Mabry, Teacher (msmabry@stanford.edu)
Bing Nursery School
850 Escondido Road
Stanford, CA 94305
650-723-4865

Barb Gallick, Teacher (bagalli@ilstu.edu)
Lisa Lee, Teacher
Scott Brouette, Teacher
Child Care Center
Illinois State University
Campus Box 5060
Normal, IL 61790-5060
309-438-3770

Candy Ganzel, Teacher
Cherry Tree Elementary School
Carmel, IN 46032
cganzel@ccs.k12.in.us

Judy Harris Helm, Early Childhood Consultant
10109 Fox Creek Drive
Brimfield, IL 61517
309-446-9664
BESTPRACTICES@prodigy.net

Lilian G. Katz, Professor, Early Childhood Education
and Director, ERIC Clearinghouse on Elementary and Early Childhood Education
51 Gerty Drive
Champaign, IL 61820-7469
217-333-1386
l-katz@uiuc.edu

Lorraine Leskiw, Teacher
Shanthu Manoharan, Teacher
Child Study Centre
University of Alberta
Alberta, Edmonton, Canada T6G 2G5

Diane McClellan, Professor
College of Education
Governors State University
University Park, IL 60466
708-534-6971
dianeMcc@aol.com

Debbie Noyes, Assistant Professor of Early Childhood Education
Greenville College
315 E. College Avenue
P.O. Box 159
Greenville, IL 62246-0159
618-664-2800 ext. 4267
dnoyes@greenville.edu

Fern Rierson, Teacher (freirson@planet.eon.net)
Julie Gellner, Teacher
Tera Woollard, Teacher
Stephanie Kelly, Teacher
Child Study Centre
University of Alberta
Edmonton, Alberta, Canada T6G 2G5

Dianne Rothenberg, Associate Director ERIC/EECE
51 Gerty Drive
Champaign, IL 61820-7469
217-333-1386
rothenbe@uiuc.edu

Dot Schuler, Teacher
Grafton Elementary School
P.O. Box 205
Grafton, IL 62022
618-786-3388
dschuler@plantnet.com

Pam Scranton, Teacher (seans@heart.net)
Brenda Wiles, Associate Teacher
Bright Beginnings/Woodford County Special Education Association
R. R. 4
711 West Mt. Vernon
Metamora, IL 61548
309-367-4903

Rebecca Tonelli
Sallee Beneke, Instructor
Early Childhood Education Center
Illinois Valley Community College
815 N. Orlando Smith Avenue
Oglesby, IL 61348-9692
815-224-2720 ext. 302

Carmelle Workun, Teacher
Darlene Williams, Teacher (403-492-2811)
Child Study Centre
University of Alberta
Alberta, Edmonton, Canada T6G 2G5

Carol Young, Teacher
Mary Jane Elliott, Teacher (mjelliott@es.hkis.edu.hk)
4 South Bay Close
South Bay Villa C-9
Repulse Bay, Hong Kong
852-2812-2513
852-2812-7037 (fax)